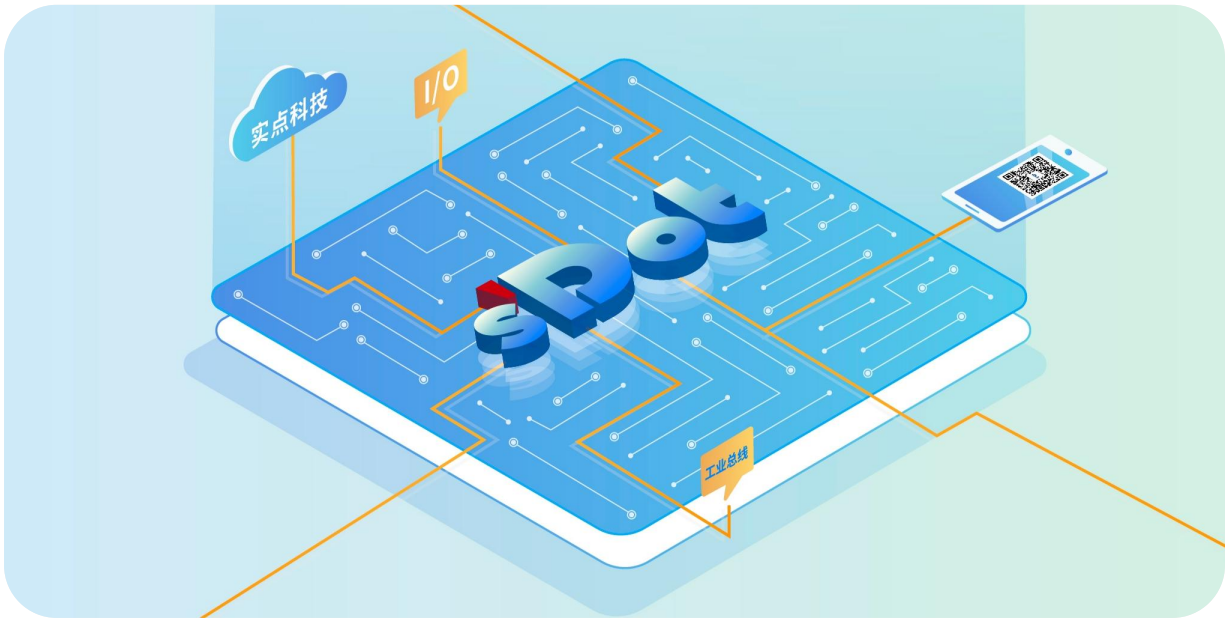

XB6S-PT04A

PTO pulse output module

User Manual

Nanjing Solidot Electronic Technology Co., Ltd.

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Table of contents

1 Product Overview

1.1 Product Introduction

XB6S-PT04A is a plug-in PTO pulse output module that uses X-bus backplane and is compatible with our XB6S series coupler module. It can be connected to a stepper/servo motor driver and drive the stepper/servo motor by outputting pulses. The module has a total of 4 groups of pulse output channels.Each pulse output channel is equipped with 4-channel input, so there are a total of 16 input channels. The combination of input and output can meet the driving scenarios of most stepper/servo motors.

1.2 Product Features

- Four-channel pulse output
  Two modes can be set: single pulse (pulse + direction) and double pulse (CW/CCW).
- One output with four inputs
  Each channel output is equipped with local positive limit, negative limit, home position, and brake signal inputs.
- Rich pulse functions
  Supports a range of functions including trapezoidal acceleration/deceleration, homing, and braking.
- Support five sports modes
  Absolute Position Mode, Relative Position Mode, Velocity Mode, Homing Mode, Jog Mode.
- Support multiple homing methods
  Four homing modes are available.The homing speed and homing approach speed support configuration.
- Support motion merging
  The speed, position, operation mode, acceleration and deceleration time can be adjusted dynamically.
- Support safe mode
  The module's pulse output action can be set when a network anomaly occurs.
- Channel-level configuration

The four channels support separate parameter configuration.

- Small size, easy to install
  The device has a compact structure, occupies little space, can be installed on a 35 mm DIN rail, and uses spring-type wiring terminals for quick and easy wiring.
- Easy to diagnose
  The innovative channel indicator light design is close to the channel, making it clear at a glance and easy to detect and maintain.
- Easy configuration
  The configuration is simple and supports mainstream master stations.

2 Naming conventions

2.1 Naming conventions

XB 6 S - P T 0 4 A
(1) (2)(3) (4)(5)(6)(7)(8)

Serial Number	Meaning	Description
(1)	Bus type	XB: X-bus
(2)	Product Series	6: Insert type
(3)	Product Version	S: Strengthen, upgraded version
(4)	Module Type	P：Pulse
(5)	Module Function	L：Location S: SSI synchronous serial interface protocol T: Train (PTO: Pulse Train Output) pulse train output C: Count pulse count
(6)	Function input channel number	0, 1, 2, 4, 8
(7)	Function output channel number	0, 1, 2, 4, 8
(8)	Electrical characteristics	D：Difference, orthogonal A: NPN, 24VDC B: PNP, 24VDC C: PNP/NPN, 5VDC, TTL (compatible) L: NPN, 5VDC, TTL, Sinking Y: PNP, 5VDC, TTL, Sourcing

3 Product Parameters

3.1 General Parameters

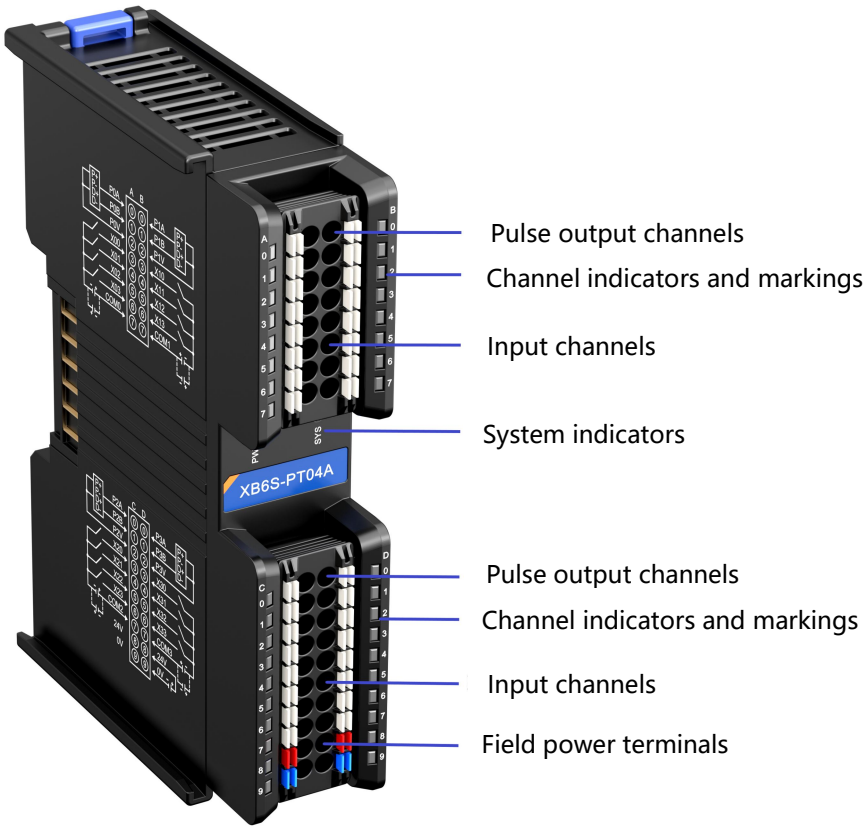
Interface parameters		
Product Model	XB6S-PT04A	
Bus Protocol	X-bus	
Bus input power rated voltage	5VDC (4.5V~5.5V)	
Rated current consumption	150mA	
Power consumption	0.65W	
Process data volume: Downlink	56 Bytes	
Process data volume: Uplink	48 Bytes	
Channel Type	Input:16Ch, PNP/NPN	Output: 4 Ch, NPN
Refresh rate	1 ms	

Technical Parameters	
System input power	5VDC
Field side input power	24VDC (15V~30V)
Pulse output voltage	Pulse high level: determined by the field side input power supply (15V~30V)
	Pulse low level: 0V
Output Channel	4 channels
Pulse output frequency	200kHz
Pulse Mode	Single pulse (pulse + direction), double pulse (CW/CCW)
Pulse output type	NPN
Input Channel	16 channels
Input channel function	Positive limit, negative limit, origin switch, brake (all can be reused as general digital input)
Input Type	PNP/NPN
Input signal logic selection	Input signal can be configured as normally open/normally closed
Digital input type	Type1/Type3
Exercise	Absolute position mode, relative (incremental) position mode, speed mode, homing mode, jog mode
Trapezoidal acceleration and deceleration	Support
Movement Merger	Supports configuration of single merge mode, continuous merge mode, and turning off this function
Channel-level parameter configuration	Support
Homing mode	Support 4 types
Safe Mode	Supports continued operation, deceleration stop and brake stop
Forced braking	support
Dimensions	106.4×25.7×72.3mm
Weight	105g
Wiring method	Screw-free quick plug
Wire length	<30m (unshielded)
Installation	DIN 35 mm standard rail installation
Operating temperature	-20℃~+60℃
Storage temperature	-40℃~+80℃
relative humidity	95%, non-condensing
Protection level	IP20

4 Panel

4.1 Panel structure

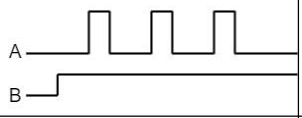
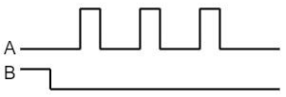
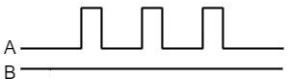
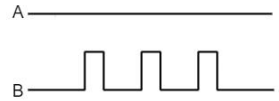
Name of each part of the product



4.2 Indicator light function

Name	Logo	Color	Status	Status Description
Power indicator	PWR	GREEN	Steady on	Power supply is normal
			OFF	The product is not powered on or the power supply is abnormal
Communication indicator light	SYS	GREEN	Steady on	The system is running normally
			Flashing 1Hz	No business data interaction, waiting to establish business data interaction
			Flashing 10Hz	Firmware Upgrade
			OFF	System not working

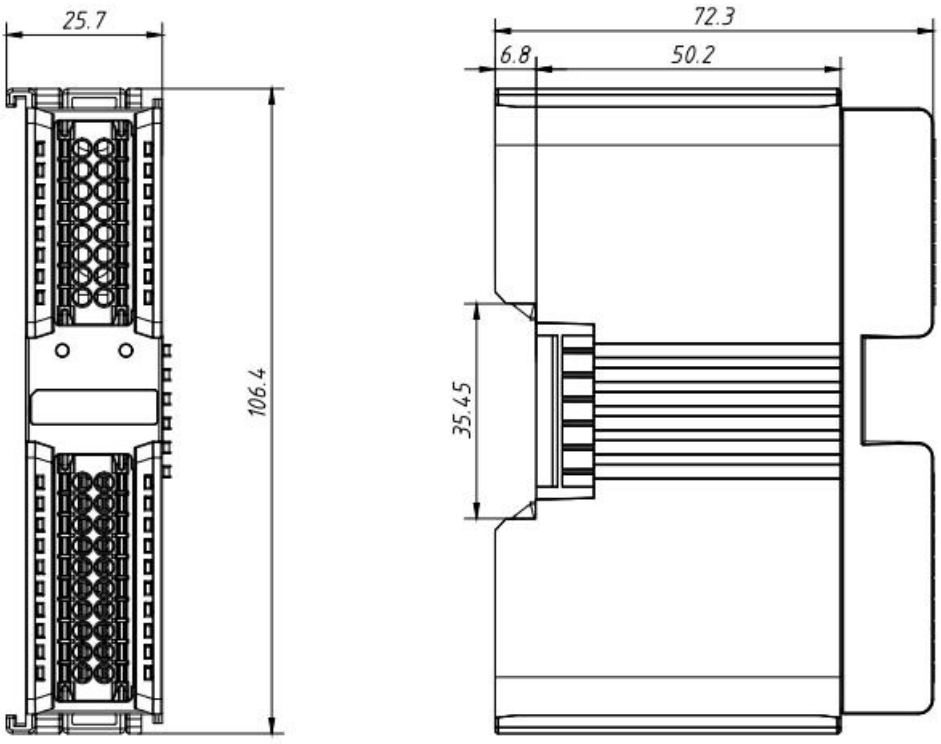
Name	Logo	Color	Input signal logic	status	Status Description
Input channel indicator	3~6	green	Normally open	Steady on	Channel has signal input
				OFF	Channel no signal input
			Normally Closed	Steady on	Channel no signal input
				OFF	Channel has signal input

name	color	Pulse output mode	Running direction	Forward/reverse pulse waveform	A-lamp (ID: 0)	B lamp (Identifier: 1)
Output channel indicator	green	Pulse+direction	Forward		Steady on	Steady on
			Reversal		Steady on	OFF
		CW/CCW	Forward		Steady on	OFF
			Reversal		OFF	Steady on

5 Installation and removal

5.1 Dimensions

Overall specifications (unit: mm)



5.2 Installation Guide

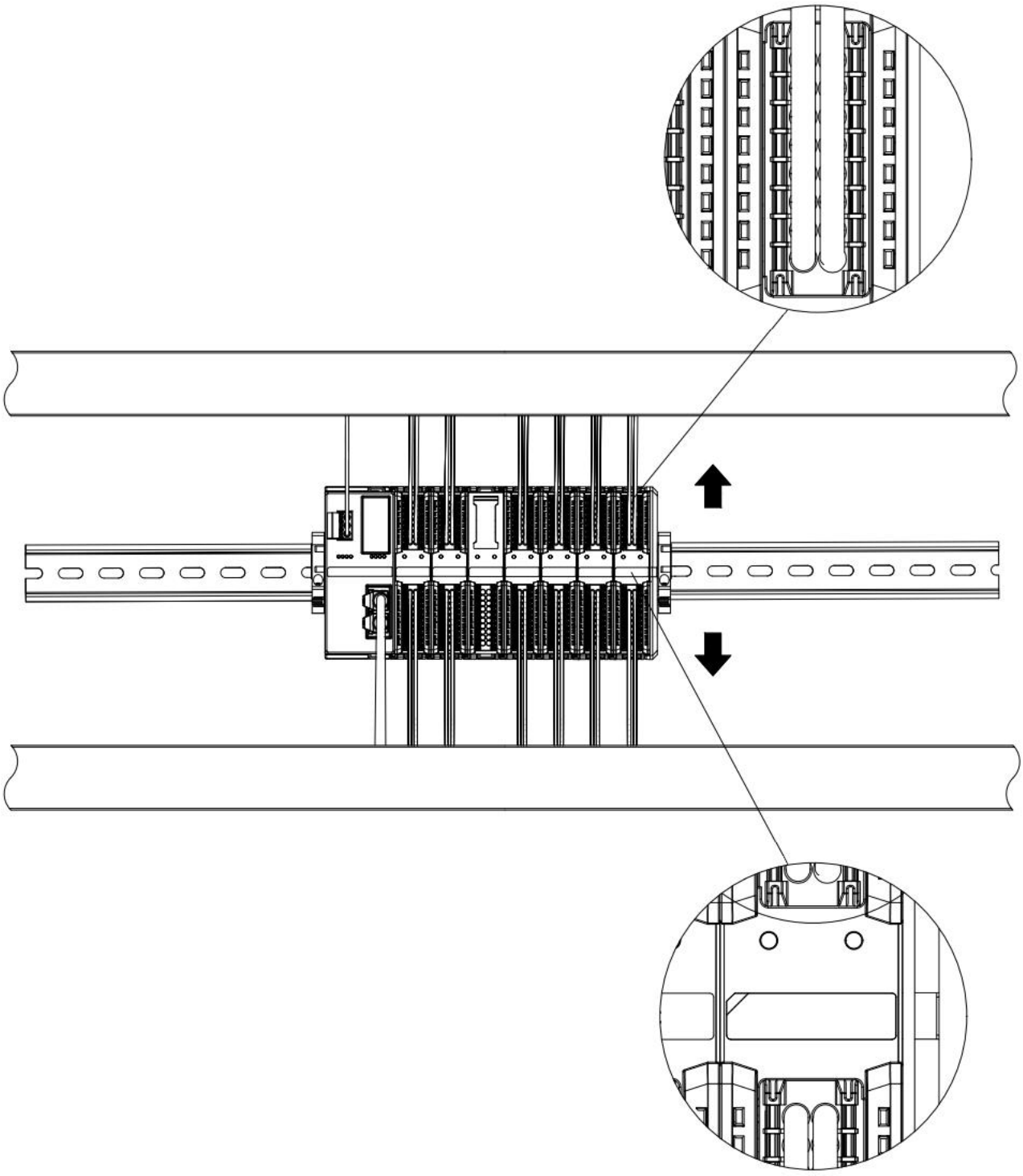
Installation/Removal Precautions

- **The module protection level is IP20. The module needs to be installed in a cabinet and used indoors.**
- **Ensure that the cabinet has good ventilation (such as installing an exhaust fan in the cabinet).**
- **Do not install this device near or over any equipment that may cause overheating.**
- **Be sure to install the module vertically on the fixed rail and ensure that there is sufficient air circulation around it (there should be at least 50 mm of air circulation space above and below the module).**
- **After installing the module, be sure to install the guide rail fixings at both ends to secure the module.**
- **Installation/disassembly must be performed with the power off.**
- **After the module is installed, it is recommended to connect and route the cables in an up-and-down manner.**

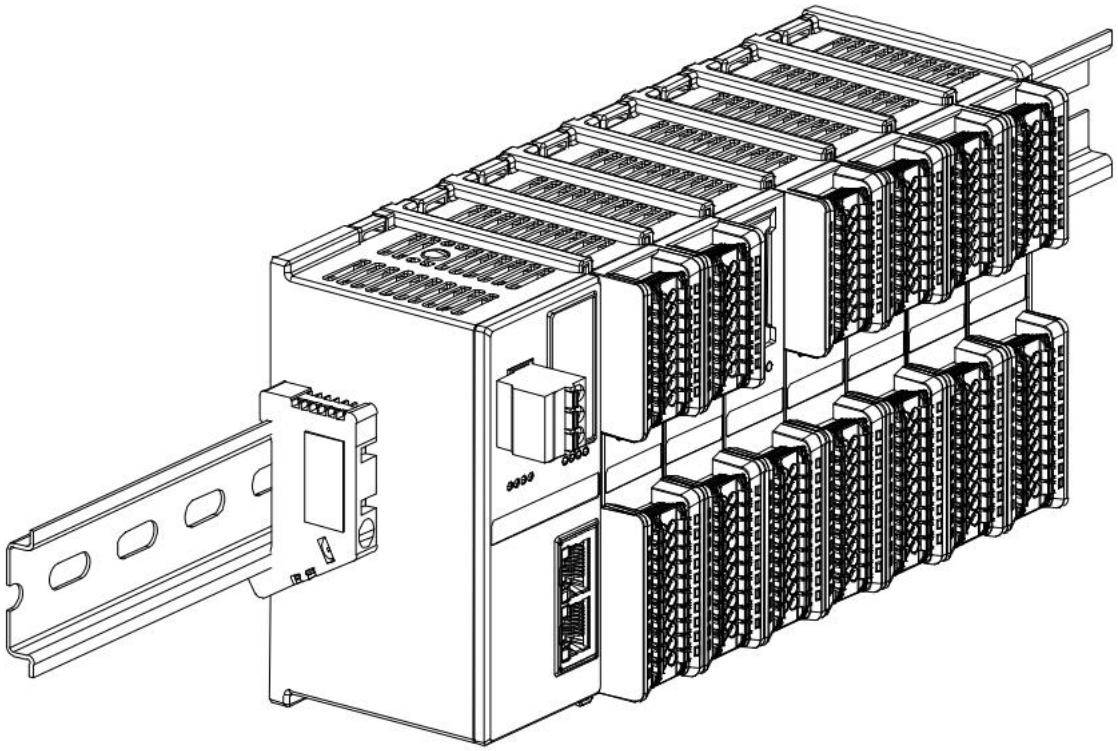
⚠ Warning

- If used in a manner not specified in the product user manual, the protection provided by the equipment may be impaired.

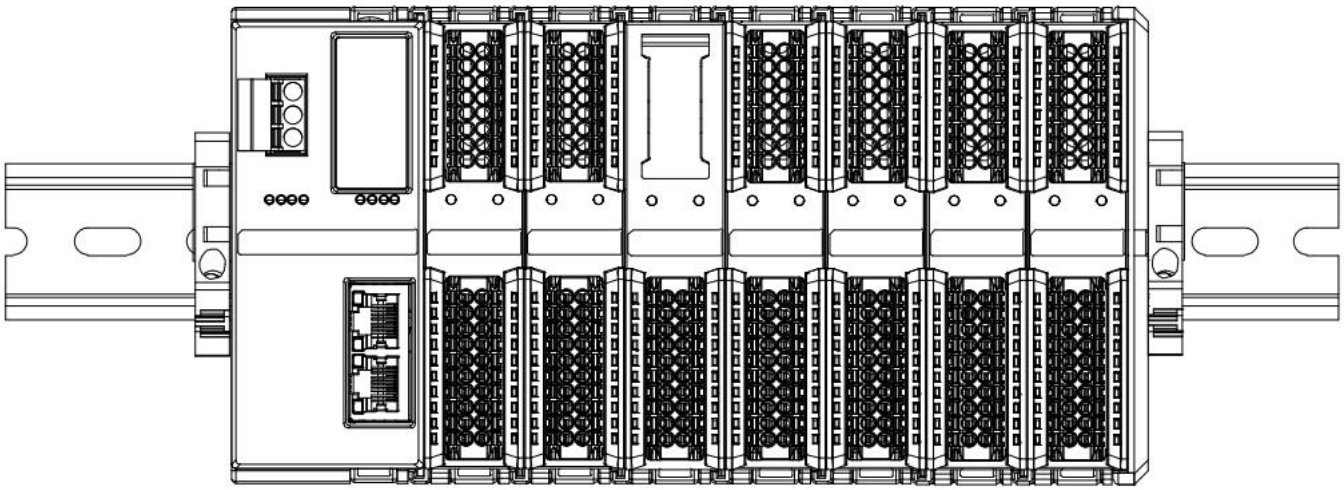
Module installation diagram, minimum clearance between top and bottom (≥ 50mm)



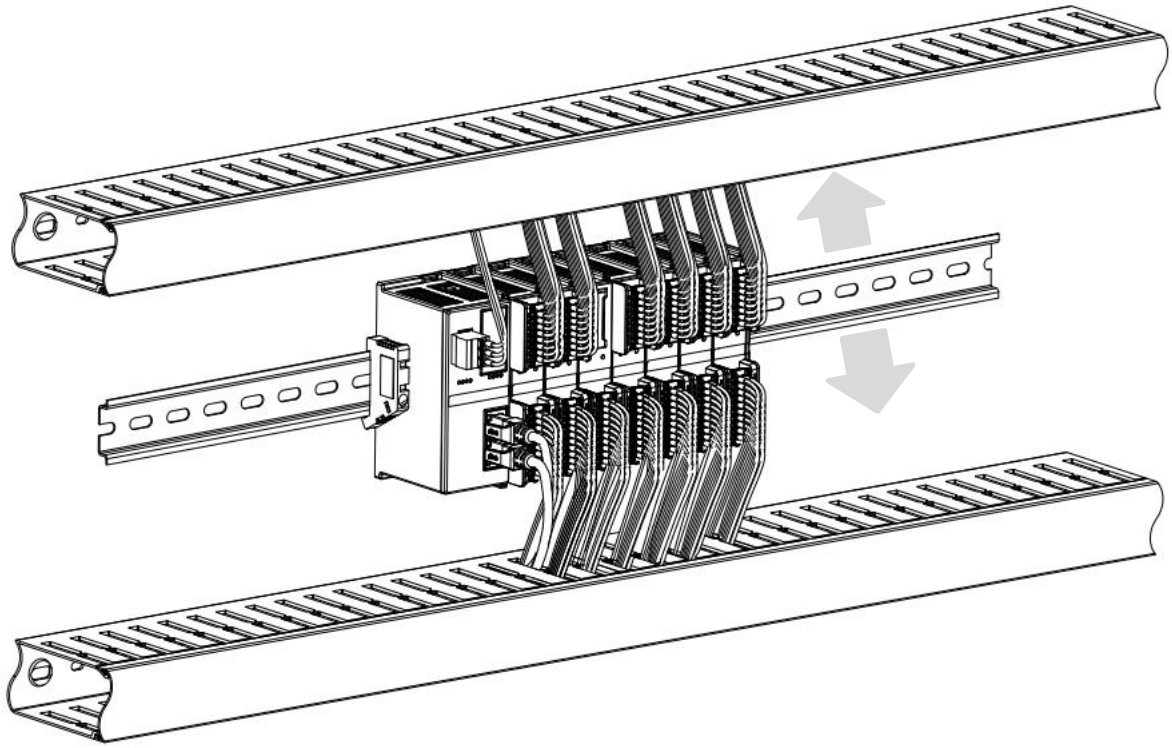
Ensure the module is installed vertically on the fixed rail



Be sure to install the rail fixings



Module upper and lower wiring diagram



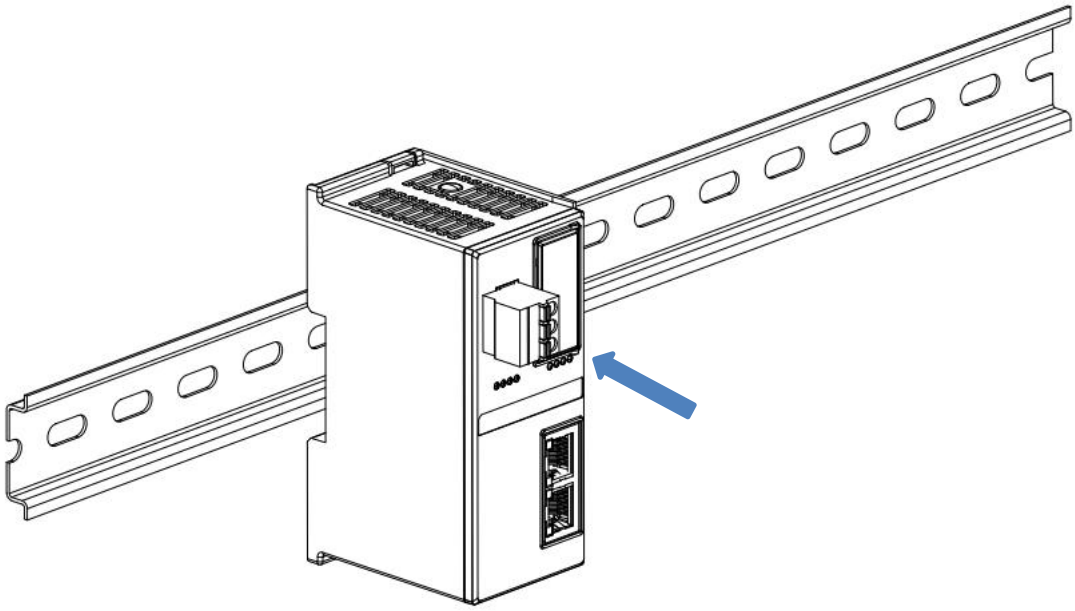
5.3 Installation and removal steps

Module installation and removal	
Module installation steps	1. Install the coupler module on the fixed guide rail first.
	2. Install the required I/O modules or functional modules in sequence on the right side of the coupler module.
	3. After installing all required modules, install the terminal cover to complete the module assembly.
	4. Install the guide rail fixings at both ends of the coupler module and terminal cover to secure the module.
Module disassembly steps	1. Loosen the guide rail fixings at both ends of the module.
	2. Use a flat-blade screwdriver to pry open the module buckle.
	3. Pull out the disassembled module.

5.4 Installation and disassembly diagram

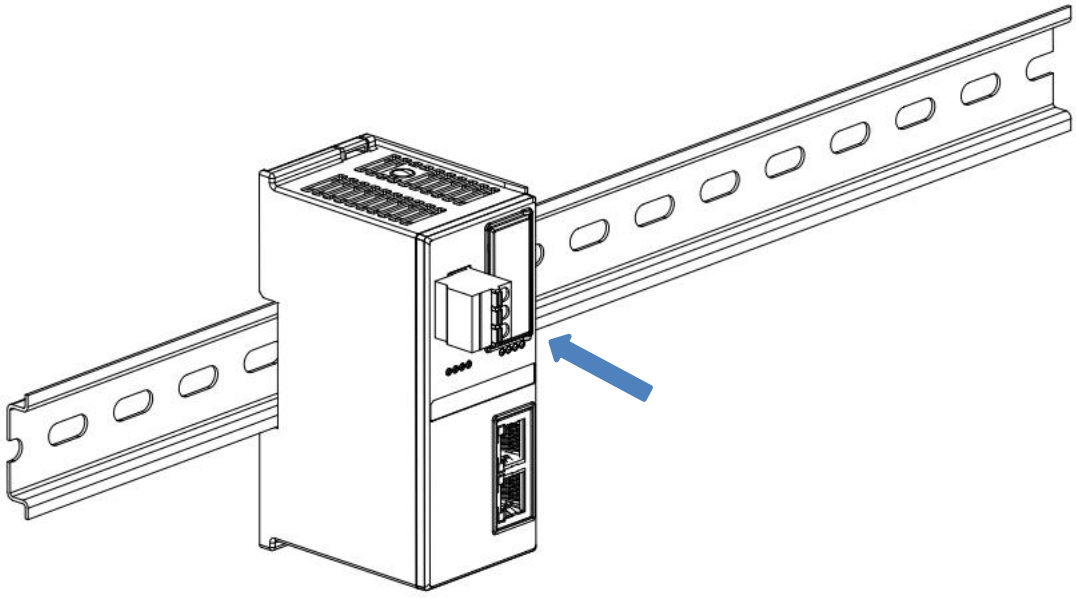
Coupler module installation

- Align the coupler module vertically with the guide rail slot, as shown in Figure ① below.



①

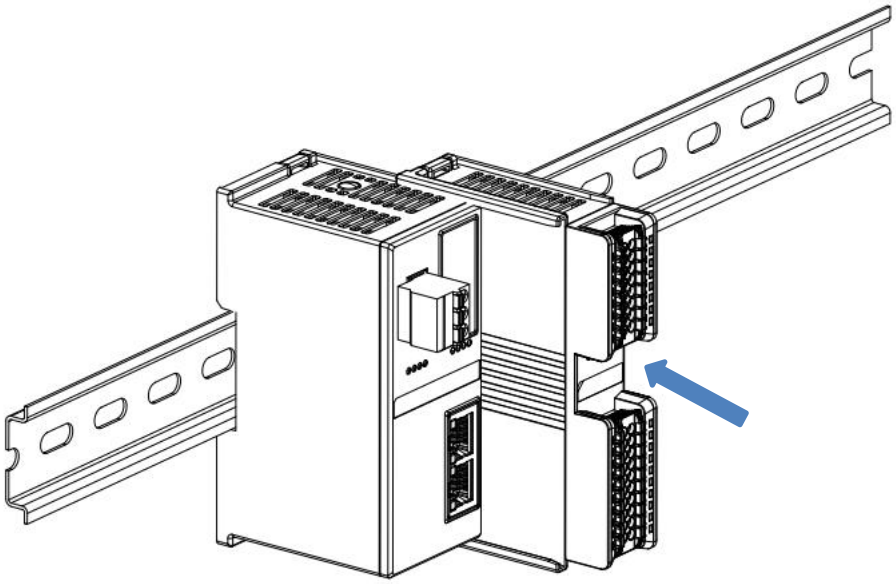
- Press the coupler module toward the guide rail with force until you hear a "click" sound. The module is then installed in place, as shown in Figure ② below.



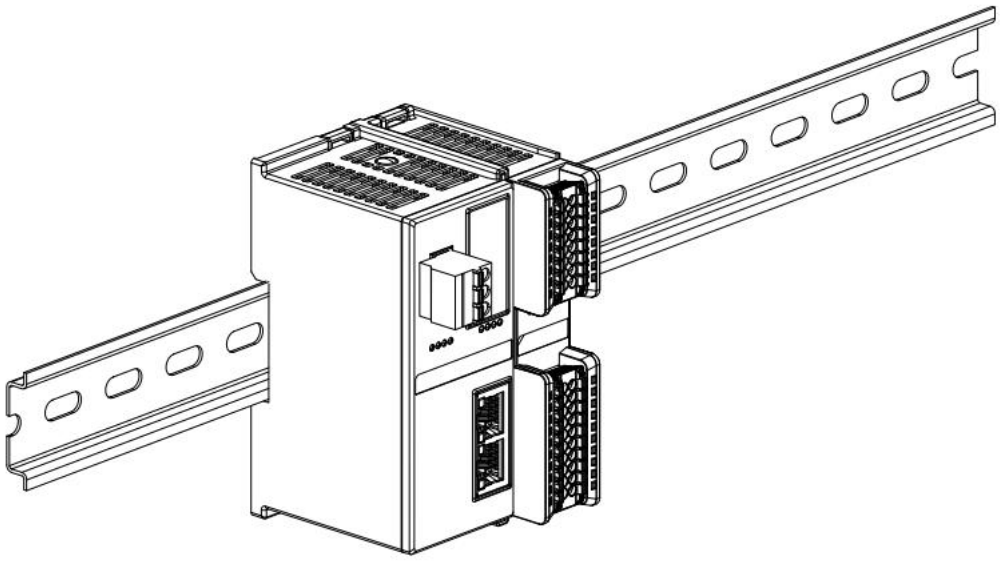
②

I/O module installation

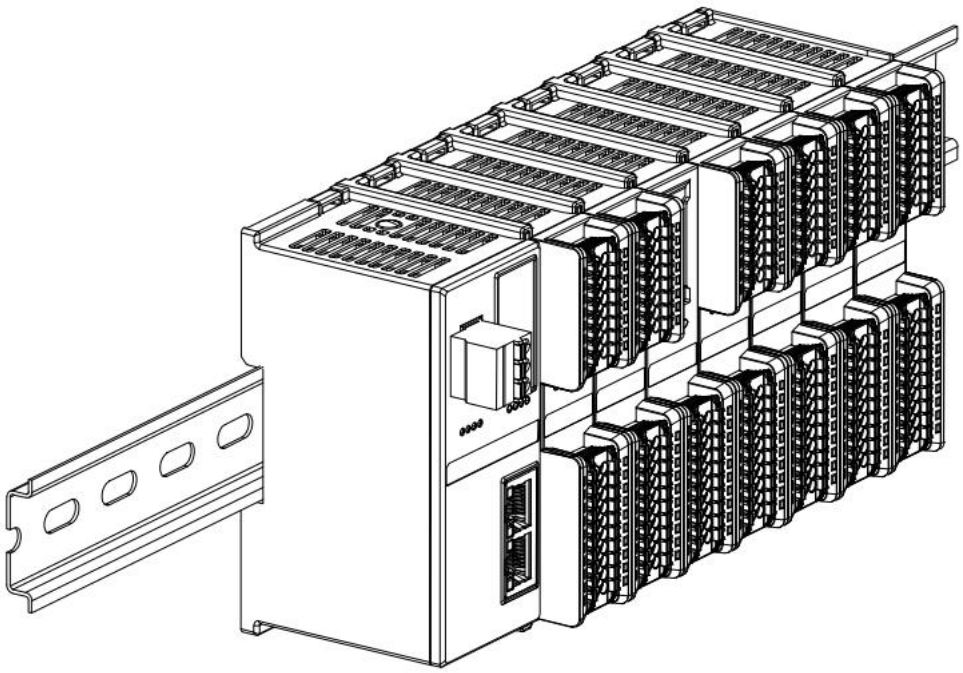
- Follow the steps above to install the coupler module, and install the required I/O modules or functional modules one by one. Push them in as shown in Figures ③, ④, and ⑤ below. When you hear a "click," the module is installed in place.



③



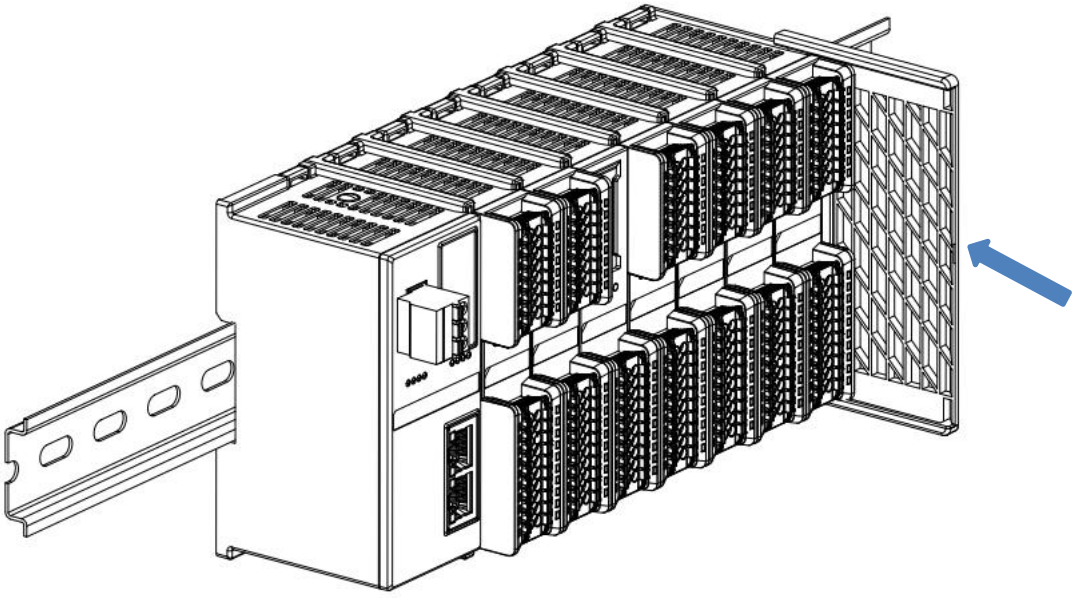
④



⑤

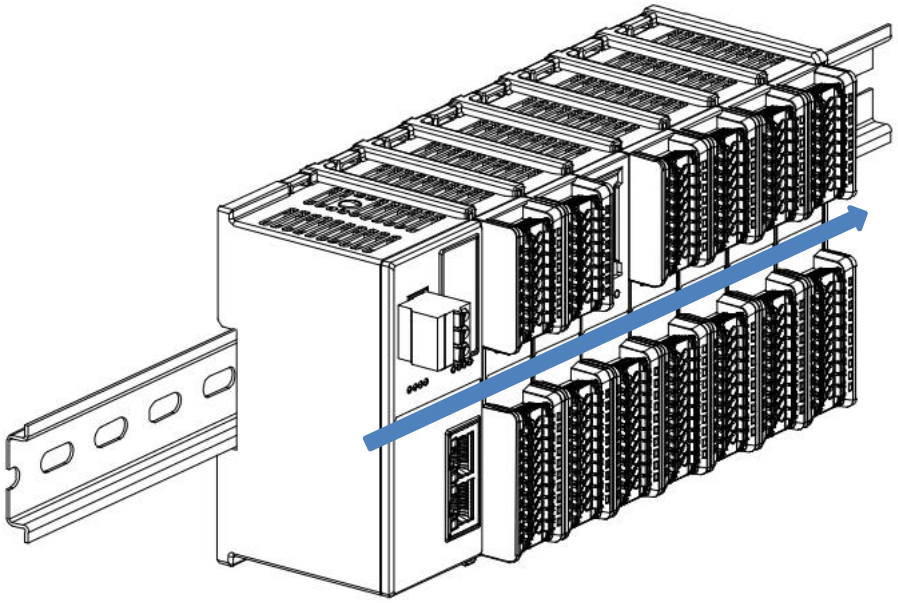
Terminal cover installation

- Install the terminal cover on the right side of the last module, aligning the groove on the terminal cover with the guide rail. Refer to the installation method for the I/O module and push the terminal cover inwards into place, as shown in Figure ⑥ below.



⑥

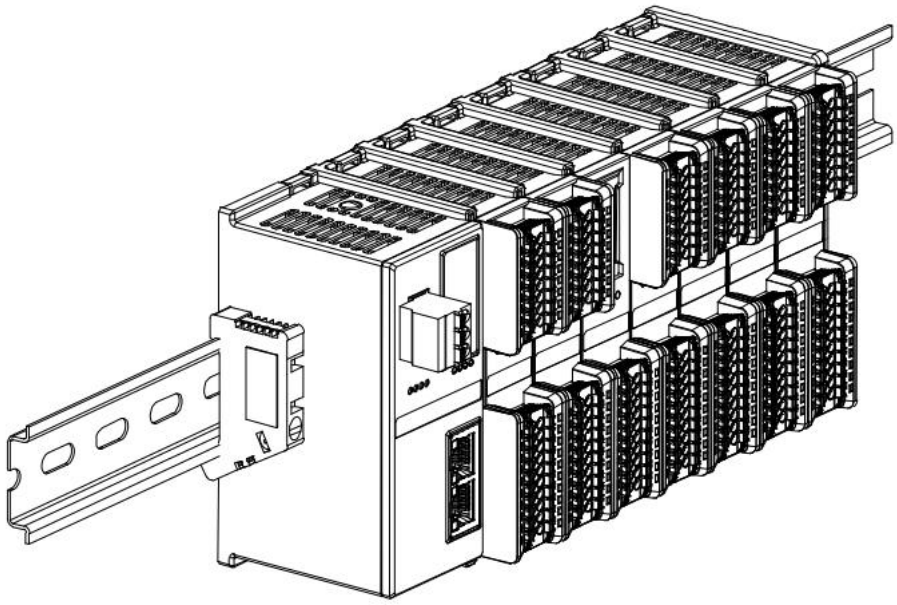
- After the terminal cover is installed, check whether the front of the entire module is flat and ensure that all modules and end covers are installed in place and the front is flush, as shown in Figure ⑦ below.



⑦

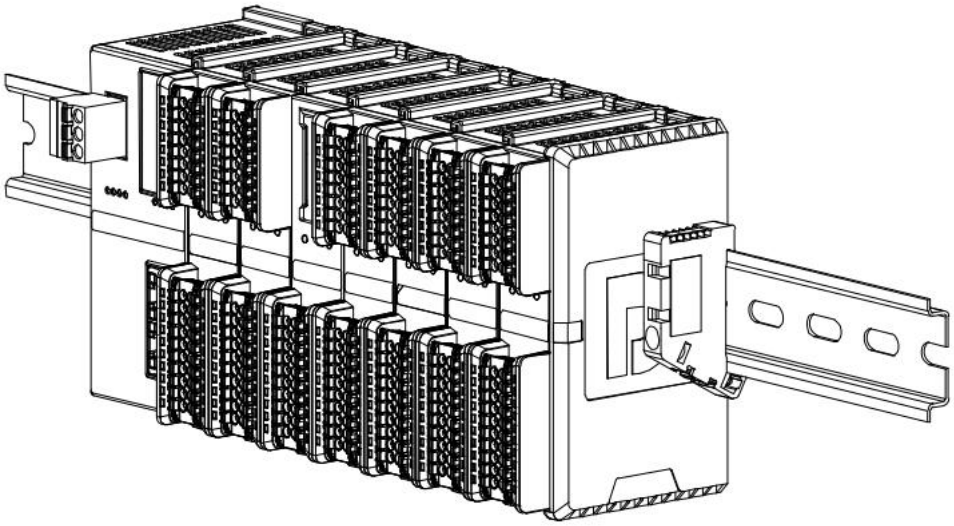
Guide rail fixing installation

- Install and tighten the guide rail fixings close to the left side of the coupler, as shown in Figure ⑧ below.



⑧

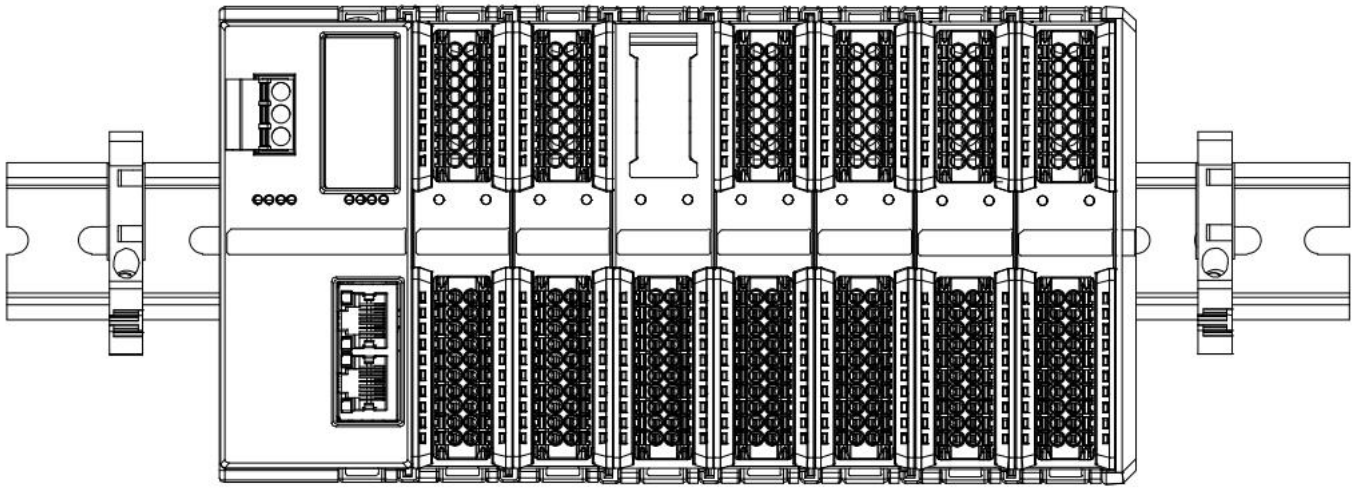
- Install the guide rail fixture on the right side of the terminal cover. First, push the guide rail fixture toward the coupler to ensure that the module is installed firmly, and then tighten the guide rail fixture with a screwdriver, as shown in Figure 9 below.



⑨

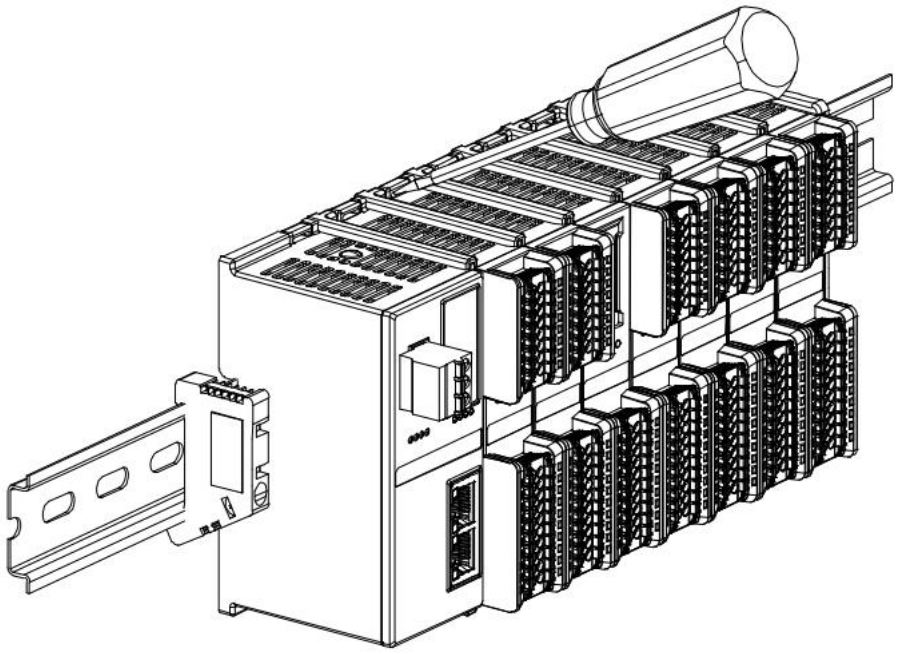
Disassembly

- Use a screwdriver to loosen the guide rail fixture at one end of the module and move it to one side to ensure there is a gap between the module and the guide rail fixture, as shown in Figure ⑩ below.

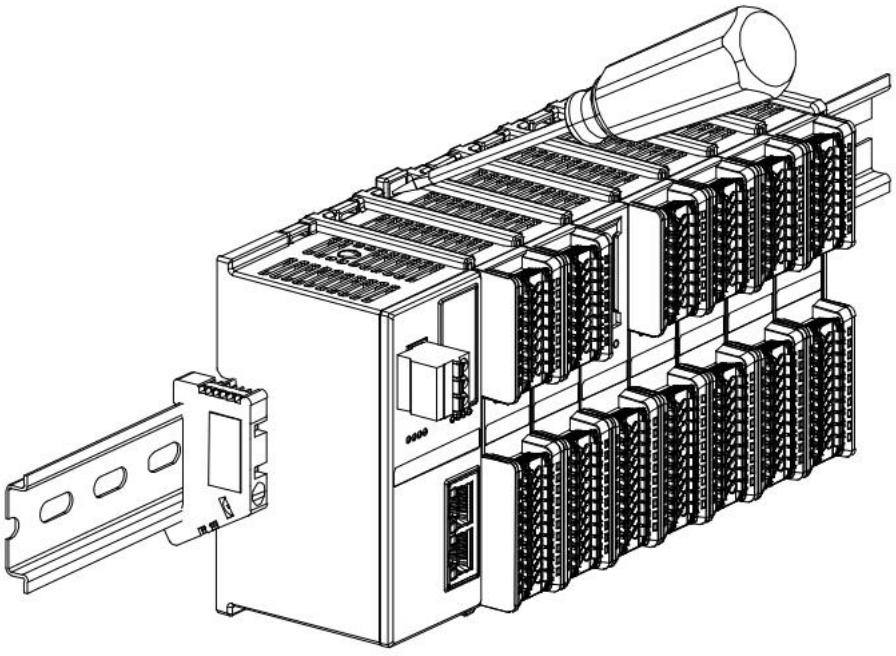


⑩

- Insert a flat-head screwdriver into the buckle of the module to be removed, and apply force sideways toward the module (until you hear a click), as shown in the figure below.⑪and⑫Note: Each module has a buckle on the top and bottom, and both modules are operated in the same way.

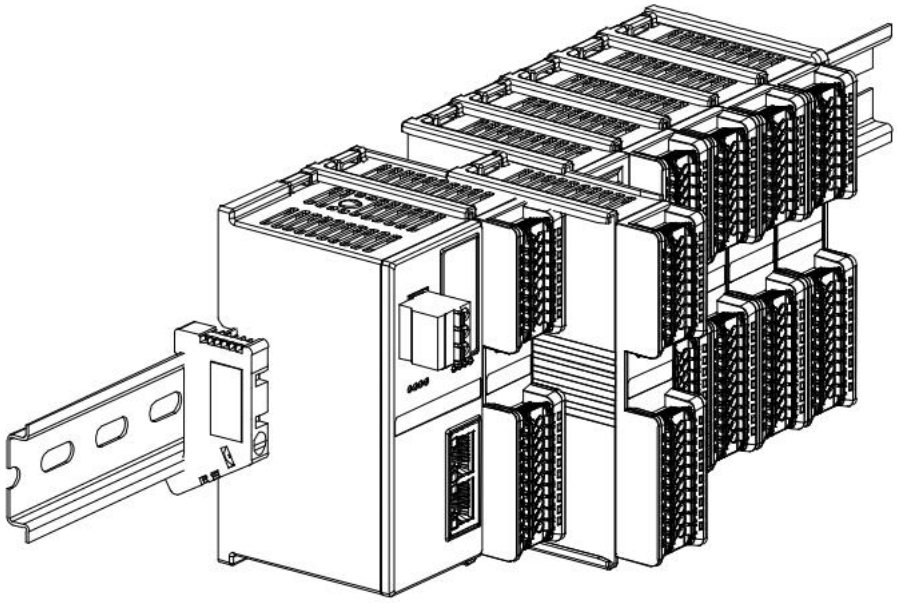


⑪



⑫

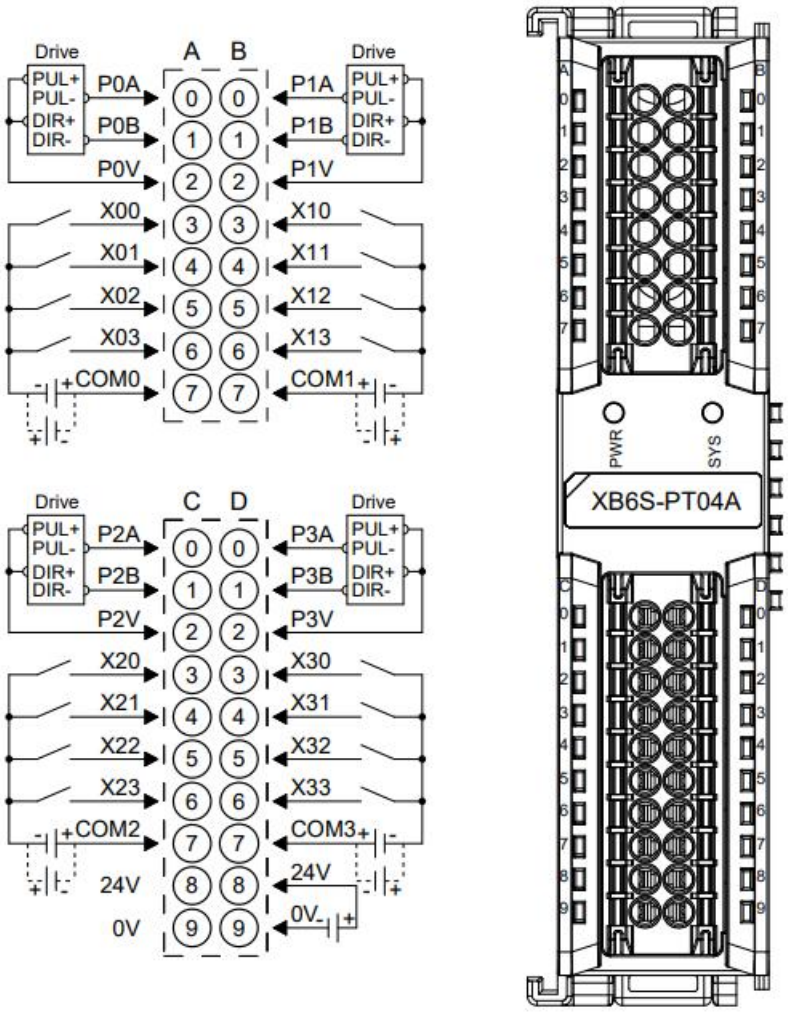
■ Follow the opposite steps of installing the module to disassemble it, as shown below.⑬shown.



⑬

6 Wiring

6.1 Wiring Diagram



*COM0~COM3 are DI common terminals, not interconnected internally, and are NPN/PNP compatible;

*24V internal conduction; 0V internal conduction;

*P0V~P3V are only supported after XB6S-PT04A[1] version.

6.2 Terminal Block Definition

A		B	
Terminal marking	**Description**	**Terminal marking**	**Description**
0	CH0 pulse output A line	0	CH1 pulse output A line
1	CH0 pulse output B line	1	CH1 pulse output B line
2	CH0 pulse power supply 24V	2	CH1 pulse power supply 24V
3	CH0 input positive limit	3	CH1 input positive limit
4	CH0 input negative limit	4	CH1 input negative limit
5	CH0 input home signal	5	CH1 input home signal
6	CH0 input brake	6	CH1 input brake
7	CH0 input common terminal	7	CH1 input common terminal
C		**D**	
Terminal marking	**Description**	**Terminal marking**	**Description**
0	CH2 pulse output A line	0	CH3 pulse output A line
1	CH2 pulse output B line	1	CH3 pulse output B line
2	CH2 pulse power supply 24V	2	CH3 pulse power supply 24V
3	CH2 input positive limit	3	CH3 input positive limit
4	CH2 input negative limit	4	CH3 input negative limit
5	CH2 input home signal	5	CH3 input home signal
6	CH2 input brake	6	CH3 input brake
7	CH2 input common terminal	7	CH3 input common terminal
8	Field side power supply 24V	8	Field side power supply 24V
9	Field side power supply 0V	9	Field side power supply 0V

7 Use

7.1 Configuration parameter definition

The module configuration has a total of 30 parameters, including 6 module-level parameters and 6 channel-level parameters. The configuration parameters are shown in the following table, taking channel 0 as an example. Note: Configuration parameters can only be modified when the channel is in static state.

Function	Parameter name	Value range	default value
Pulse output mode	Pulse Mode	0: Pul+Direction Pul+Dir	0
		1: Double pulse CW/CCW	
Safe Mode	Safe Mode	0: Keep On Running	0
		1: Slow Down	
		2: Brake Stop	
Braking time	Brake Time (ms)	20~5000ms	200
Motion Merge Configuration	Merge Config	0: Enable - single merge mode	0
		1: Enable - continuous merging mode	
		2: Turn off motion merging	
Digital input channel function configuration	Input Config	0x0001: DI0 (CH0 positive limit) 0x0002: DI1 (CH0 negative limit) 0x0004: DI2 (CH0 origin) 0x0008: DI3 (CH0 brake) 0x0010: DI4 (CH1 positive limit) ... 0x8000: DI15 (CH3 brake)	0
Homing timeout	Homing TimeOut (ms)	0~100000ms	0
Startup speed	CH0 Startup Speed	1~200000Hz	1

Homing mode	CH0 Homing Mode	0: mode 19	2
		1: mode 21	
		2: mode 24	
		3: mode 28	
Homing speed	CH0 Homing Speed	1~200000Hz	1000
Homing approach speed	CH0 Homing Approach Speed	1~200000Hz	500
Input signal logic selection	CH0 Input Logic	0: Limit is normally open, origin brake is normally open	0
		1: Limit normally open, origin brake normally closed	
		2: Limit normally closed, origin brake normally open	
		3: Limit normally closed, origin brake normally closed	
Scale	CH0 Scaling	1~60000	1

Note: Pulse output mode, safety mode, brake time, motion merging configuration, digital input channel function configuration, and homing timeout are module-level parameters and are set uniformly for all four channels.
Start speed, homing mode, homing speed, homing approach speed, input signal logic selection, and scale are channel-level parameters and are configured separately for each channel.

7.1.1 Pulse mode configuration

The XB6S-PT04A supports two pulse output modes: Pulse Mode 0: Pulse + Direction, and Pulse Mode 1: Dual Pulse (CW/CCW). These configuration parameters are shared by all four output channels and cannot be configured individually.

7.1.2 Safe Mode

When communication is interrupted, three safety modes can be selected: 0: Continue running, 1: Decelerate to stop, and 2: Brake to stop. The four output channels share this configuration parameter and do not support individual configuration.

7.1.3 Braking time configuration

Once the brake command is triggered, the device enters the braking phase and will stop within the set time regardless of speed. The default braking time is 200ms. This configuration parameter is shared by all four output channels and cannot be configured individually.

7.1.4 Motion Merge Configuration

Motion merging configuration supports three modes: single-shot mode, in which the Start parameter must be set from 0 to 1 for each motion merge; continuous mode, in which motion merging can be initiated by modifying the downlink data directly without setting the Start parameter from 0 to 1; and merge-disable mode, in which motion merging is disabled. This configuration parameter is shared by all four output channels and cannot be configured individually.

7.1.5 Input channel function configuration

Allows any digital input to be changed to normal mode, that is, to disable the positive and negative limit, origin, and brake functions. The four channels have a total of 16 bits. Setting the corresponding bit to 1 indicates that it is set to normal digital input.

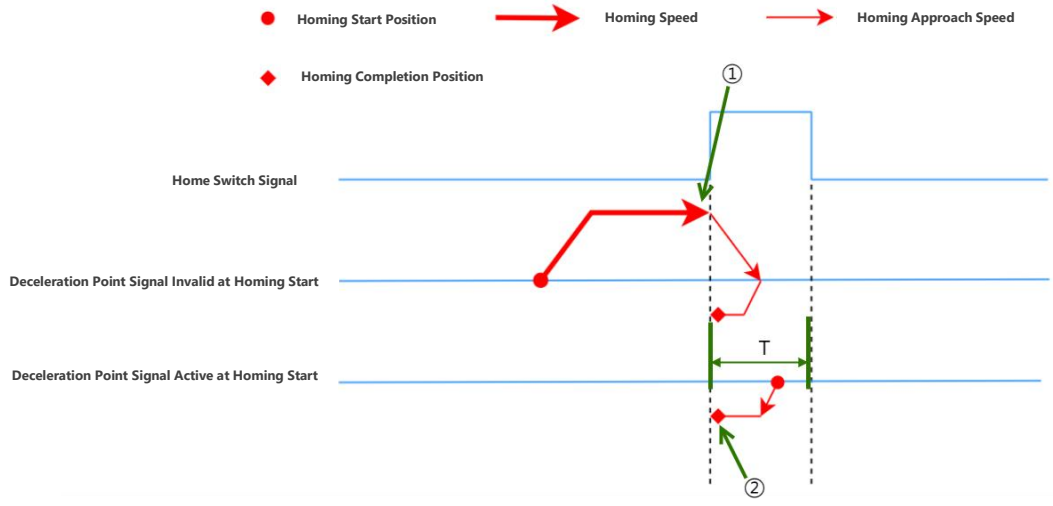
Example 1: If the positive limit of channel 0 is turned off, the first bit is set to 1 (2#0001 converted to decimal is 10#1).

Example 2: If the positive limit of channel 1 is disabled, set the 5th bit to 1 (2#0001 0000 converted to decimal is 10#16).

Note: Repurposing the home signal will disable the homing function.

7.1.6 Homing timeout

A complete return-to-origin operation involves ① entering the home signal and ② exiting the home signal, as shown in the figure below. After the module stops at the home signal, the time required to exit the home signal is T. If an abnormality occurs in the home signal, preventing the module from exiting after entering the home signal, the module will consider the return-to-origin operation a failure and report a timeout alarm.



The module supports setting the homing timeout from 0 to 100,000 ms. The default setting is 0, which disables the homing timeout detection. This configuration parameter is shared by all four output channels and cannot be configured individually.

7.1.7 Startup speed

Determining a trapezoidal acceleration/deceleration curve requires four parameters: acceleration time, deceleration time, start speed, and operating speed. Operating speed, acceleration time, and deceleration time are frequently modified, so they are included in the downlink instructions. The start speed, on the other hand, is included in the configuration parameters, and each of the four channels can be set independently.

In actual use, the motion trajectories of the absolute/relative position mode, speed mode, and homing mode all follow this set of trapezoidal acceleration and deceleration parameters.

7.1.8 Homing parameters

Homing involves finding the home signal through a combination of positive and negative limit switches and the home signal. There are three configuration parameters for homing: homing mode, homing speed, and homing approach speed. Four homing modes are available: Homing Mode 19, 21, 24, and 28. These three parameters can be set independently for each of the four channels. A coordinate reset command is automatically executed after a successful homing.

- **Homing mode 19:**

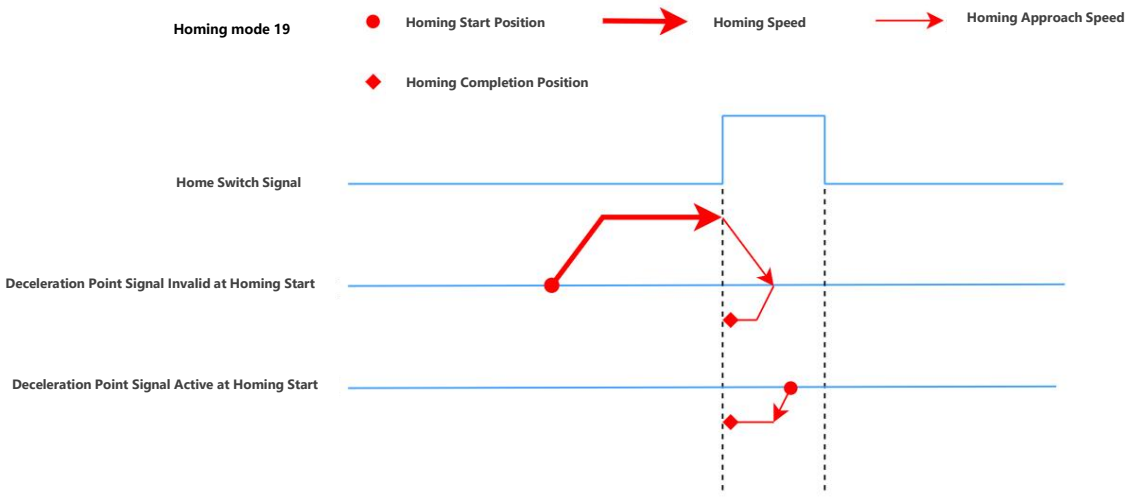
  ①When there is no home signal input:

  a. Move in the positive direction at the homing speed, and when there is an home signal input, decelerate to 0;

  b. Move in the negative direction again at the homing approach speed until the home signal disappears and then stop moving.

  ②When the home signal exists:

  a. Move in the negative direction at the homing approach speed and stop when the home signal disappears.



◆ **Homing mode 21:**

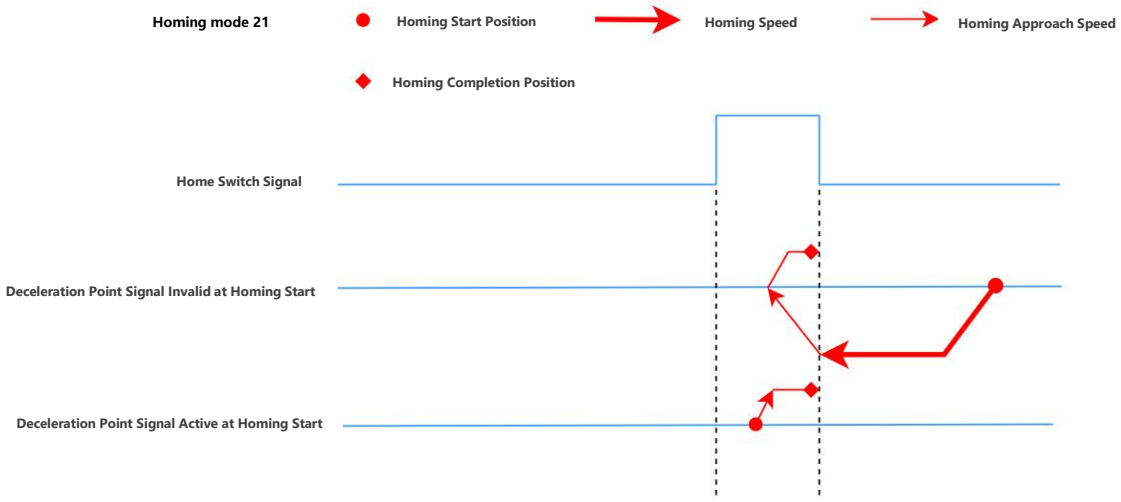
①When there is no home signal input:

a. Move in the negative direction at the homing speed, and when the home signal is input, decelerate to 0;

b. Move in the positive direction again at the homing approach speed until the home signal disappears and then stop moving.

②When the home signal exists:

a. Move in the positive direction at the homing approach speed and stop when the home signal disappears.



◆ **Homing mode 24:**

①When there is no origin/positive limit signal input:

a. Move in the positive direction at the homing speed until the home signal input is detected, then decelerate until the speed reaches 0;

b. Then move in the negative direction at the homing approach speed until the home signal disappears, and then decelerate until the speed reaches 0;

c. Then move in the positive direction at the homing approach speed until the home signal appears and stop moving.

②When there is no origin/positive limit signal input:

a. Move in the positive direction at the homing speed. When the positive limit signal is input, brake until the speed reaches 0.

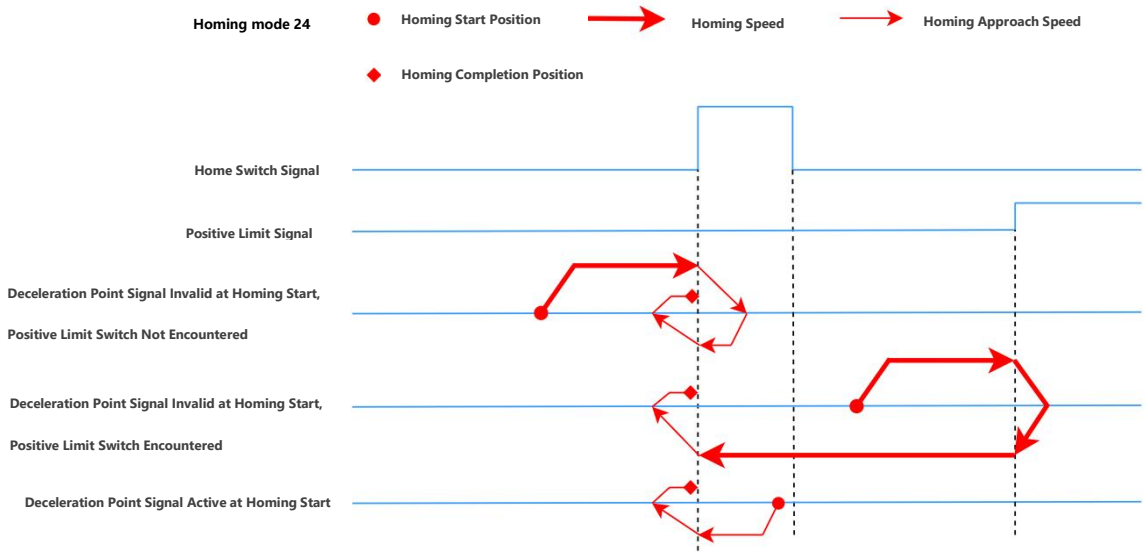
b. Then move in the negative direction at the homing speed. When exiting the home signal, decelerate until the speed reaches 0.

c. Then move in the positive direction at the homing approach speed until the home signal appears and stop moving.

③When the home signal exists:

a. Move in the negative direction at the homing approach speed. When exiting the home signal, decelerate until the speed reaches 0.

b. Then move in the positive direction at the homing approach speed until the home signal appears and stop moving.



◆ **Homing mode 28:**

①When there is no origin/negative limit signal input:

a. Move in the negative direction at the homing speed until the home signal input is detected, then decelerate until the speed reaches 0;

b. Then move in the positive direction at the homing approach speed until the home signal disappears, and then decelerate until the speed reaches 0;

c. Then move in the negative direction at the homing approach speed until the home signal appears and stop moving.

②When there is no origin/negative limit signal input:

a. Move in the negative direction at the homing speed. When the negative limit signal is input, brake until the speed reaches 0.

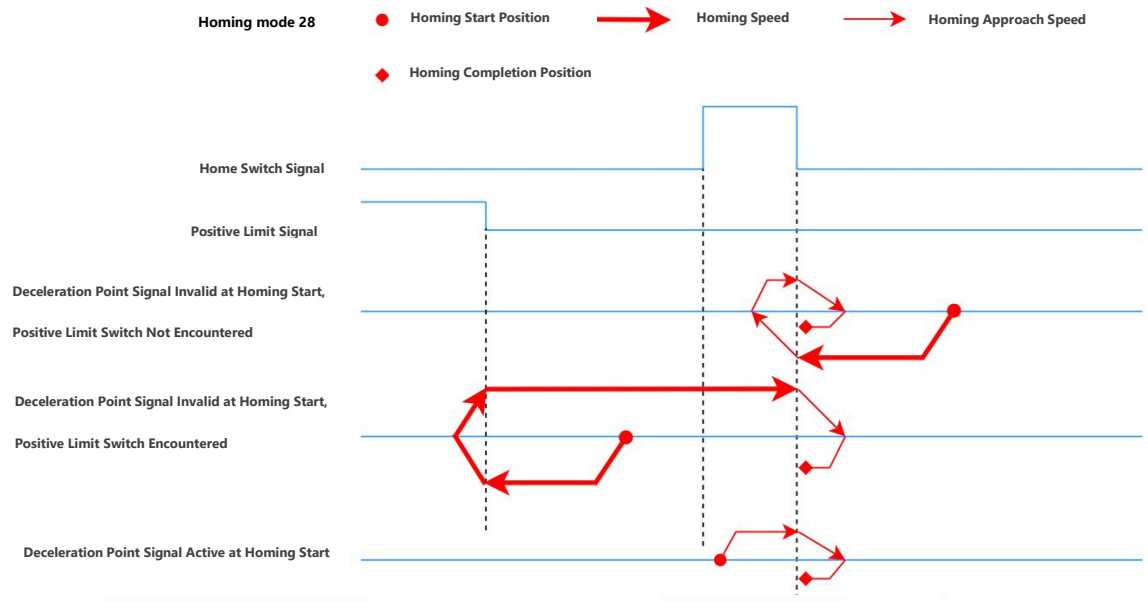
b. Then move in the positive direction at the homing speed. When exiting the home signal, decelerate until the speed reaches 0.

c. Then move in the negative direction at the homing approach speed until the home signal appears and stop moving.

③When the home signal exists:

a. Move in the positive direction at the homing approach speed. When exiting the home signal, decelerate until the speed reaches 0.

b. Then move in the negative direction at the homing approach speed until the home signal appears and stop moving.



7.1.9 Input signal logic

The input signal Input Logic can be configured as:

0: Limit is normally open, origin brake is normally open;

1: Limit is normally open, origin brake is normally closed;

2: Limit is normally closed, origin brake is normally open;

3: Limit normally closed, origin brake normally closed;

The input signal logic can be set for each of the four channels individually, but the positive limit and negative limit can only be set collectively, and the origin and brake can only be set collectively.

7.1.10 Scale

Set the speed and position units as needed. For example, if 1000 pulses constitute one revolution, you can set Scaling to 1000. In this case, the running speed, running steps, startup speed, homing speed, and homing approach speed will all be multiplied by 1000. This means that the units of the step and speed parameters issued will be revolutions.

7.2 Process data

7.2.1 Uplink data

Uplink data: 48 bytes (12 bytes per channel, channel [n] ranges from 0 to 3)				
Name	**Meaning**	**Value Range**	**Data Type**	**Length**
CH[n] Pulse Output Direction	Actual pulse output direction	0: Forward 1: Reverse	bool	1 bit bit0
CH[n] Pulse Status Flag 1	Pulse status flag	00: No pulse output 01: Accelerating	bool	2 bits bit1~bit2
CH[n] Pulse Status Flag 2		10: Decelerating 11: Constant speed	bool	
CH[n] Homing Mode Running	Homing running	1: In the homing state 0: Not in homing state	bool	1 bit bit3
CH[n] Position Mode Running	Position mode running	1: In position mode 0: Not in position mode	bool	1 bit bit4
CH[n] Velocity Mode Running	Speed mode running	1: In speed mode 0: Not in speed mode	bool	1 bit bit5
CH[n] Homed	Homing completed	1: Homing completed 0: Homing is not completed	bool	1 bit bit6
CH[n] Location Arrival	Location Arrival	1: Position reached 0: Position not reached	bool	1 bit bit7
CH[n] Velocity Arrival	Velocity Arrival	1: Speed reached 0: Speed not reached	bool	1 bit bit8
CH[n] Positive Limit Signal	Positive limit signal input	1: There is signal input 0: No signal input	bool	1 bit bit9
CH[n] Negative Limit Signal	Negative limit signal input	1: There is signal input 0: No signal input	bool	1 bit bit 10
CH[n] Home Signal	Origin signal input	1: There is signal input 0: No signal input	bool	1 bit bit11
CH[n] Brake Signal	Brake signal input	1: There is signal input 0: No signal input	bool	1 bit bit12
CH[n] Reserved	Reserved	Reserved	bool	3 bits bit13~bit15
CH[n] Error Code	Alarm Code	0x0001: Startup speed > running speed 0x0002: Startup speed > return	unsigned16	2 bytes

		speed 0x0004: Start speed > homing approach speed 0x0008: Zero approach speed > homing speed 0x0010: Running speed exceeds the limit (speed × Scaling > 200000) 0x0020: Running step count out of bounds (position × Scaling > 2^31-1 or position × Scaling < -2^31) 0x0040: Startup speed exceeds the limit (speed × Scaling > 200000) 0x0080: Homing speed exceeds the limit (speed × Scaling > 200000 or speed × Scaling < 1) 0x0100: The homing approach speed exceeds the limit (speed × Scaling > 200000 or speed × Scaling < 1) 0x0200: Acceleration time exceeds the limit (20~5000ms) 0x0400: Deceleration time exceeds the limit (20~5000ms) 0x0800: Scaling out of range (1-60000) 0x1000: Positive limit is triggered, and further movement in the positive direction is not allowed. 0x2000: Negative limit is triggered, and further movement in the negative direction is not allowed. 0x8000: Homing failed		
CH[n] Current Location	Current Location	-2,147,483,648 ~ 2,147,483,647	signed32	4 bytes
CH[n] Current Velocity	Current speed	0~200kHz	signed32	4 bytes

Data Description:

- **Pulse Output Direction**
  The pulse output direction flag can reflect the actual movement direction in different modes.

- **Pulse Status Flag**
  The status flag indicates the current state of the pulse output. It should be noted that normal deceleration and braking will cause the state to switch to deceleration. The current state can be determined by the positive and negative limit and whether there is a brake signal input.

- **Homing Mode Running**
  Indicates whether the current channel device is in homing mode.

- **Position Mode Running**
  Indicates whether the current channel device is running in position mode.

- **Velocity Mode Running**
  Indicates whether the current channel device is running in speed mode.

- **Homed**
  When the module starts the homing command and successfully finds the origin, this bit will be set to 1. When the channel starts motion again, it will be set to 0 again. Please note that if the homing fails for various reasons, this bit will not be set to 1.

- **Location Arrival**
  When the module is running in position mode and has reached the target position, this bit will be set to 1. When the channel starts moving again, it will be set to 0 again.

- **Velocity Arrival**
  When the module is running in speed mode and the running speed has reached the set value, this bit will be set to 1. When the channel starts moving again, it will be set to 0 again.

- **Positive limit signal, negative limit signal, home signal, brake signal input Positive Limit Signal, Negative Limit Signal, Origin Signal and Brake Signal**
  The four signals correspond to four input channels, indicating the presence or absence of the four input signals of the corresponding channels.

- **Error Code**
  Once a channel generates an alarm message, the movement related to the alarm message cannot be started, but the movement unrelated to the alarm message can still be started normally.
  Example 1: When the startup speed of channel 0 is greater than the running speed, the channel generates an alarm message, the first alarm message bit is 1 (2#0001 converted to decimal is 10#1), and the online value of the Error Code is 1. In this case, channel 0 cannot start the speed/position mode, but can start homing normally.
  Example 2: Channel 0, bit 1 alarm is not triggered, bit 4 homing approach speed > homing speed generates an alarm, the alarm code is 8 (2#1000 converted to decimal is 10#8), and the online value

of the Error Code is 8. Therefore, channel 0 cannot start homing, but can start speed/position mode operation normally.

- **Current Location**
  The current position represents the number of pulses offset from the zero point, i.e. the command position (coordinate). If the coordinate is cleared when there is no pulse output in the channel, the value will be directly set to 0.

- **Current Velocity**
  The actual operating speed of the current channel.

7.2.2 Downlink data

Downlink instruction 56 bytes (14 bytes per channel, channel [n] ranges from 0 to 3)				
name	**meaning**	**Value range**	**Data Type**	**length**
CH[n] Running Direction	Direction of movement	0: Forward 1: Reverse	bool	1 bit bit0
CH[n] Absolute/Relative Position Mode	Absolute/ relative position mode	0: Absolute position 1: Relative position	bool	1 bit bit1
CH[n] Position/Velocity Mode	Position/ Velocity Mode	0: Position mode 1: Speed mode	bool	1 bit bit2
CH[n] Reset Coordinates	Current coordinates reset to zero	Edge control: 0->1 clears the current coordinate	bool	1 bit bit3
CH[n] Start	Start a movement	Edge control: 0->1 start	bool	1 bit bit4
CH[n] Brake	Brake command	0: No brake command 1: Trigger the brake command	bool	1 bit bit5
CH[n] Home	Start homing	Edge control: 0->1 start	bool	1 bit bit6
CH[n] JOG	Jog command	0: decelerate and stop motion 1: Running speed mode	bool	1 bit bit7
CH[n] Clear State	Clear flag	Edge control: 0->1 effective	bool	1 bit bit8
CH[n] Set Current Location	Set current location	Edge control: 0->1 effective	bool	1 bit bit9
CH[n] Reserved	Reserve	Reserve	bool	6 bits bit 10 to bit 15
CH[n] Acceleration Time	Acceleration time configuration	20~5000ms	unsigned16	2 bytes
CH[n] Deceleration Time	Deceleration time configuration	20~5000ms	unsigned16	2 bytes
CH[n] Running Velocity	Running speed configuration	1~200000Hz	unsigned32	4 bytes
CH[n] Running Position	Running step configuration	-2^31~2^31-1	signed32	4 bytes

Data Description:

- **Running Direction**
  The motion direction is actually only valid in speed mode. Because relative position mode can directly determine the positive or negative number of steps to set the direction, and absolute position mode can directly determine the size relationship between the current coordinates and the target coordinates to determine the running direction, only speed mode needs to rely on this parameter to determine the running direction.

- **Absolute/Relative Position Mode, Position/Velocity Mode**
  These three parameters together determine how to move. Relative position mode and absolute position mode need to be established on the premise of selecting position mode. If the current setting is speed mode, then this parameter is meaningless.
  Absolute position mode: The running steps indicate the running from the current coordinate to the set coordinate position.
  For example: if the current position is 600 steps and the number of running steps is 800, it means running to the position of 800 steps, that is, running 200 steps in the positive direction.
  Relative position mode: The number of running steps indicates how many steps are run directly.
  For example, if the number of running steps is -500, it means running 500 steps directly in the opposite direction.
  Speed Mode: The channel will accelerate to the operating speed according to the set acceleration curve and continue to run.
  Note: In speed mode and position mode, further movement in the same direction is not allowed after the limit is triggered. The limit is released after starting a movement in the reverse direction.
  Motion Merge Mode: In both position mode and speed mode, real-time modification of running speed, target position, acceleration time, deceleration time and running mode is supported. See 7.1.4 Motion Merging Configuration.
  For example: the current position is 10000 steps, the first start is in absolute position mode, the target position is 20000 steps, and 20000 steps are corrected during operation.
  If it is changed to 50000 steps, it will run directly to the 50000 step position.
  For example: the current position is 10000 steps, the first start is in relative position mode, the target position is 20000 steps, and 20000 steps are corrected during operation.
  If it is changed to 50,000 steps, it will run directly to the 60,000 step position.

- **Reset Coordinates**
  Reset the current coordinate to zero, and edge control 0->1 will take effect. This command will only take effect when the channel is stationary.

- **Start the movement**
  Edge control: when the channel is in a stationary state, a movement is started when this parameter changes from 0 to 1.

- **Brake command**

The brake command has the highest priority in the entire system, taking effect immediately at all times and controlled by a level. Therefore, as long as the brake command is 1, not only will the current motion be immediately stopped, but the next motion will not be allowed to start. In other words, for the device to move, the brake command must be 0.

- **Start homing Home**
  Edge control, when the channel is in the stopped state, it detects that this parameter changes from 0 to 1 and the channel returns to zero. The channel return mode and the corresponding speed follow 7.1.8 Homing parameters.

- **JOG command**
  The jog command is level controlled. When the command is set to 1, the running speed mode is started, and when it is set to 0, the speed is decelerated and stopped.

- **Clear State**
  Clear flag command, edge control 0->1 takes effect. When the parameter is detected to change from 0 to 1, two flags will be cleared: Homed and Location Arrival. This command only takes effect when the channel is stationary.

- **Set Current Location**
  Set the current position, and edge control 0->1 takes effect. You can directly set the current position (Current Location) in the uplink data to the running step number (Running Position) set in the downlink data.

- **Acceleration Time, Deceleration Time, Running Velocity, Running Position**
  The acceleration time, deceleration time, running speed and running steps in this parameter jointly determine the trapezoidal acceleration and deceleration curve.

7.3 Use Cases

- **Channel 0 runs in the forward direction for 50,000 pulses at a speed of 100,000 Hz**
  a. Configure the configuration parameters as needed;
  b. Set channel 0 to relative position mode;
     a) CH0 Position/Velocity Mode is set to 0;
     b) CH0 Absolute/Relative Position Mode is set to 1;
  c. Configure channel 0 to run at 50,000 steps, 100,000 Hz speed, and 500 acceleration and deceleration times.
     a) Set CH0 Running Velocity to 100000;
     b) Set CH0 Running Position to 50000;
     c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
  d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
     a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
  e. Set the start command of channel 0 from 0 to 1 to start motion.
     a) CH0 Start is set from 0 to 1.

- **Channel 0 is currently at 1000, moves to -20000, and runs at a speed of 100000Hz.**
  a. Configure the configuration parameters as needed;
  b. Set channel 0 to absolute position mode;
     a) CH0 Position/Velocity Mode is set to 0;
     b) CH0 Absolute/Relative Position Mode is set to 0;
  c. Configure channel 0 to run at -20,000 steps, 100,000 Hz speed, and 500 acceleration and deceleration times.
     a) Set CH0 Running Velocity to 100000;
     b) Set CH0 Running Position to -20000;
     c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
  d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
     a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
  e. Set the start command of channel 0 from 0 to 1 to start motion.
     a) CH0 Start is set from 0 to 1.

- **Channel 0 turns on speed mode, running at 100000Hz**
  a. Configure the configuration parameters;
  b. Set channel 0 to speed mode;
     a) CH0 Position/Velocity Mode is set to 1;
  c. Configure channel 0 to run at a speed of 100 kHz, the direction of motion to forward, and the acceleration and deceleration times to 500.
     a) Set CH0 Running Velocity to 100000;
     b) CH0 Running Direction is set to 0;
     c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
  d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
     a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
  e. Set the start command of channel 0 from 0 to 1 to start motion;

a) CH0 Start is set from 0 to 1.

- **Channel 0 runs at 100000Hz, in jog mode**

a. Configure the configuration parameters;
b. Configure channel 0 to run at a speed of 100000, the running direction to 0 forward, and the acceleration and deceleration times to 500;
   a) Set CH0 Running Velocity to 100000;
   b) CH0 Running Direction is set to 0;
   c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
c. Make sure channel 0 is in a static state;
d. Set the jog command of channel 0 from 0 to 1 to start motion.
   a) CH0 JOG is set from 0 to 1.

- **Channel 0 turns on and returns to zero**

a. Configure the configuration parameters, select the homing mode and set the homing speed and homing approach speed;
b. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
   a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
c. Set the homing command of channel 0 from 0 to 1 to start homing.
   a) CH0 Home is set from 0 to 1.

- **Channel 0 turns on speed mode, running at 100000Hz, and the speed is changed to 10000Hz during operation**

a. Configure the configuration parameters, such as enabling single mode in motion merging mode;
b. Set channel 0 to speed mode;
   a) CH0 Position/Velocity Mode is set to 1;
c. Configure channel 0 to run at a speed of 100,000 Hz, the direction of motion to forward, and the acceleration and deceleration times to 500.
   a) Set CH0 Running Velocity to 100000;
   b) CH0 Running Direction is set to 0;
   c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
   a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
e. Set the start command of channel 0 from 0 to 1 to start motion;
   a) CH0 Start is set from 0 to 1;
f. During the movement, change the running speed of channel 0 to 10000Hz;
   a) Set CH0 Running Velocity to 10000;
g. Reset the start command of channel 0 from 0 to 1 to start motion merging.
   a) CH0 Start is set from 0 to 1.

- **The current position of channel 0 is 10000, and it moves to the position of 20000. During the movement, the position is modified to 50000.**

a. Configure the configuration parameters as needed, for example, enable the continuous mode in motion merging mode;

b. Set channel 0 to absolute position mode;
    a) CH0 Position/Velocity Mode is set to 0;
    b) CH0 Absolute/Relative Position Mode is set to 0;
c. Configure channel 0 to run at 20,000 steps, 1000 Hz speed, and 500 acceleration and deceleration times.
    a) Set CH0 Running Velocity to 1000;
    b) Set CH0 Running Position to 20000;
    c) Set CH0 Acceleration Time and CH0 Deceleration Time to 500;
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;
    a) Make sure CH0 Brake, CH0 Pulse Status Flag 1, and CH0 Pulse Status Flag 2 are equal to 0;
e. Set the start command of channel 0 from 0 to 1 to start motion;
    a) CH0 Start is set from 0 to 1;
f. During the motion process, change the number of running steps of channel 0 to 50000 and start motion merging.
    a) Set CH0 Running Position to 50000.

7.4 Module Configuration Description

7.4.1 Application in TwinCAT3 software environment

1、Preparation

- **Hardware Environment**
  - **Module model XB6S-PT04A**
  - **EtherCAT bus coupler module, end cap**

  This description takes the XB6S-EC2002 coupler module as an example
  - **A computer with TwinCAT3 software pre-installed**
  - **EtherCAT dedicated shielded cable**
  - **Motor drivers, stepper/servo motors and other equipment**
  - **Switching power supply**
  - **Module mounting rails and rail fixings**
  - **Device Profile**

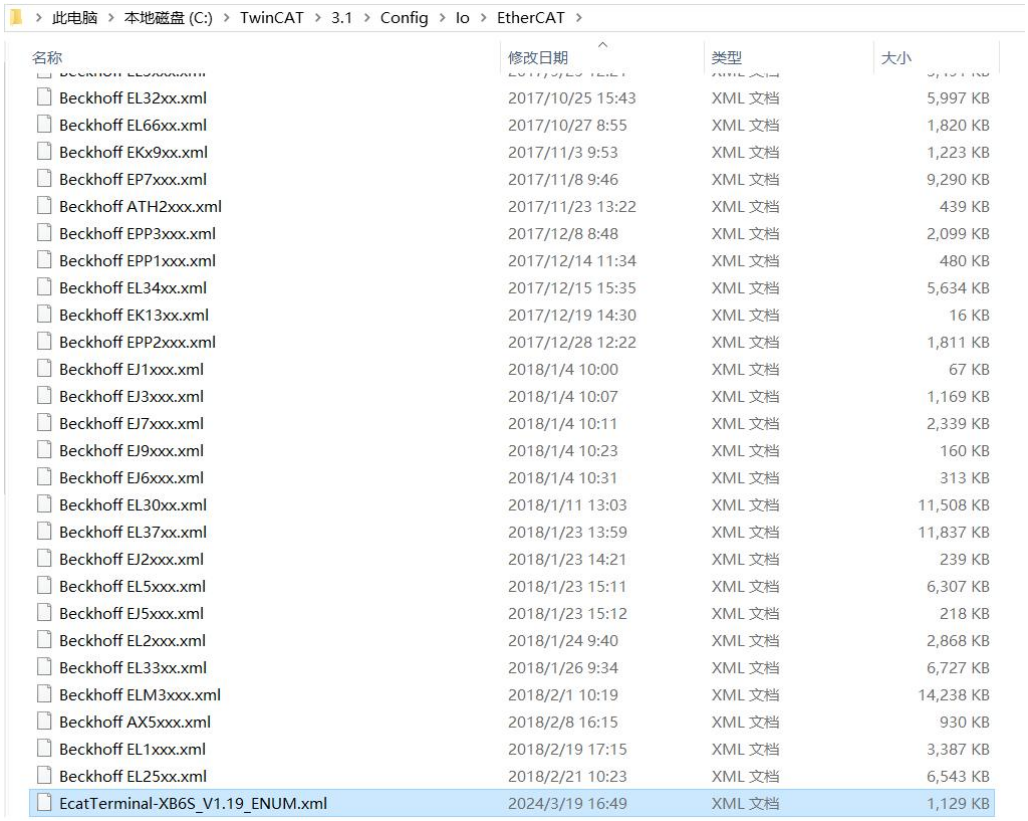
Configuration file acquisition address: https://www.solidotech.com/cn/resources/configuration-files

- **Hardware configuration and wiring**

  Please follow the "5 Installation and removal""6 Wiring"

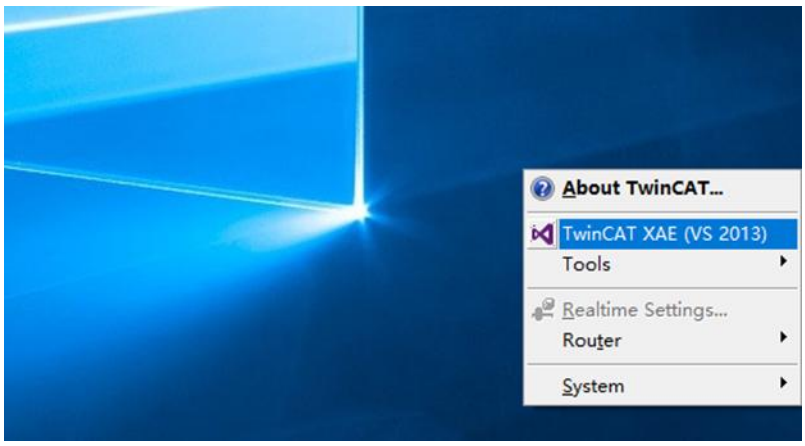
2、Pre-configured configuration files

Place the ESI configuration file (EcatTerminal-XB6S_V1.19_ENUM.xml) in the TwinCAT installation directory "C:\TwinCAT\3.1\Config\Io\EtherCAT", as shown in the figure below.

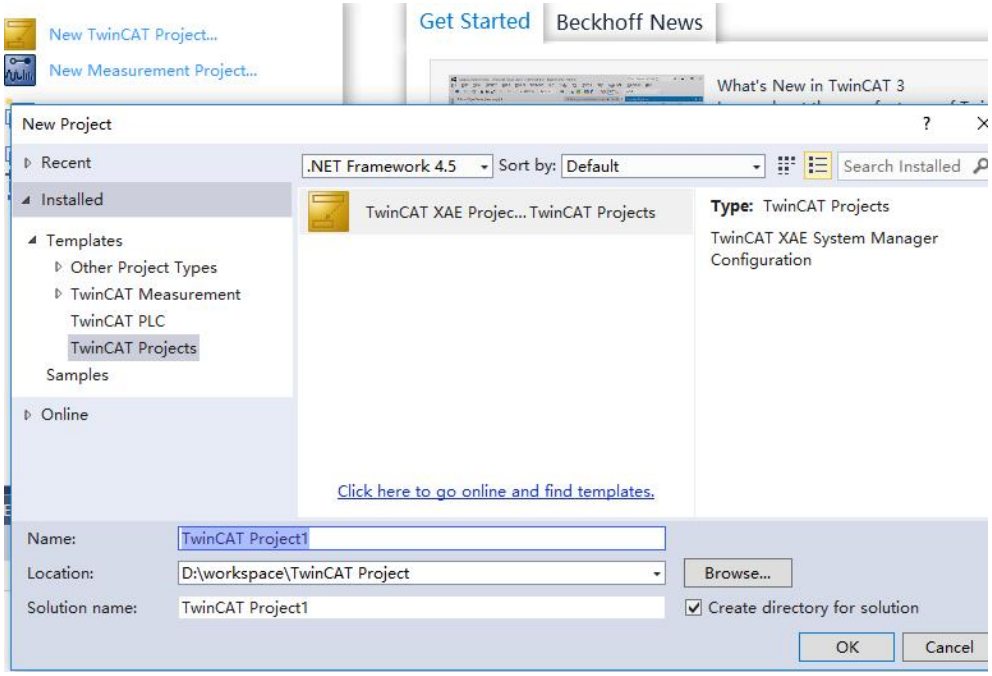


3、Create a project

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

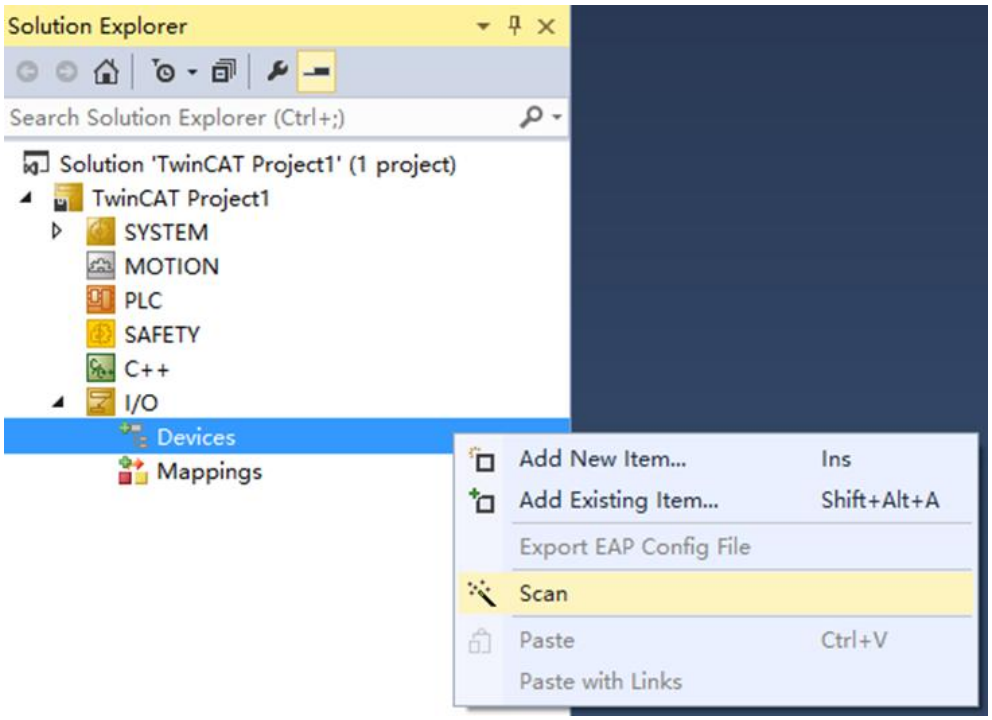


b. Click "New TwinCAT Project". In the pop-up window, "Name" and "Solution name" correspond to the project name and solution name respectively, and "Location" corresponds to the project path. You can select the default for these three items, then click "OK". The project is created successfully, as shown in the figure below.

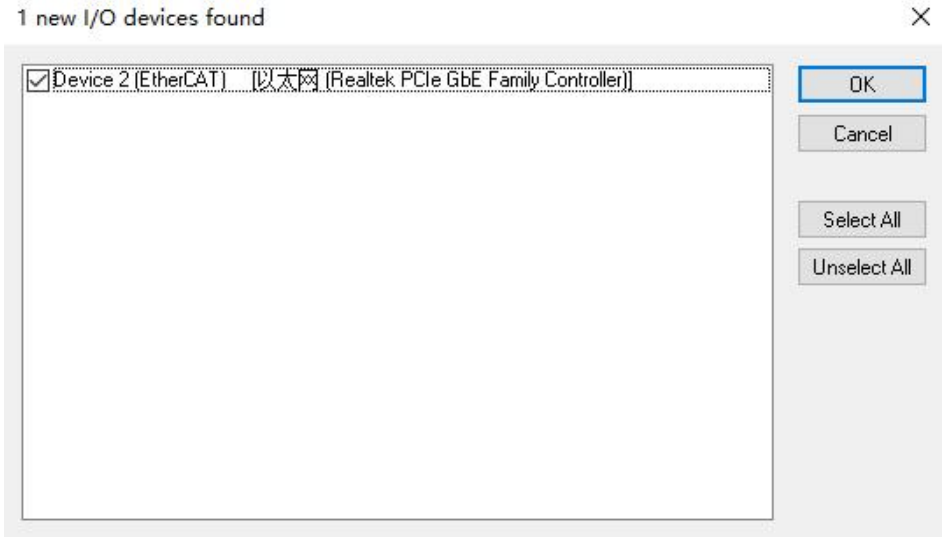


4、Scan Devices

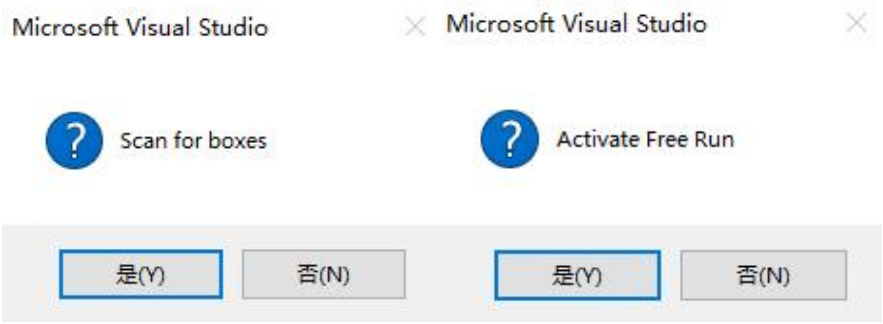
a. After creating the project, right-click the "Scan" option under "I/O -> Devices" to scan the slave devices, as shown in the figure below.



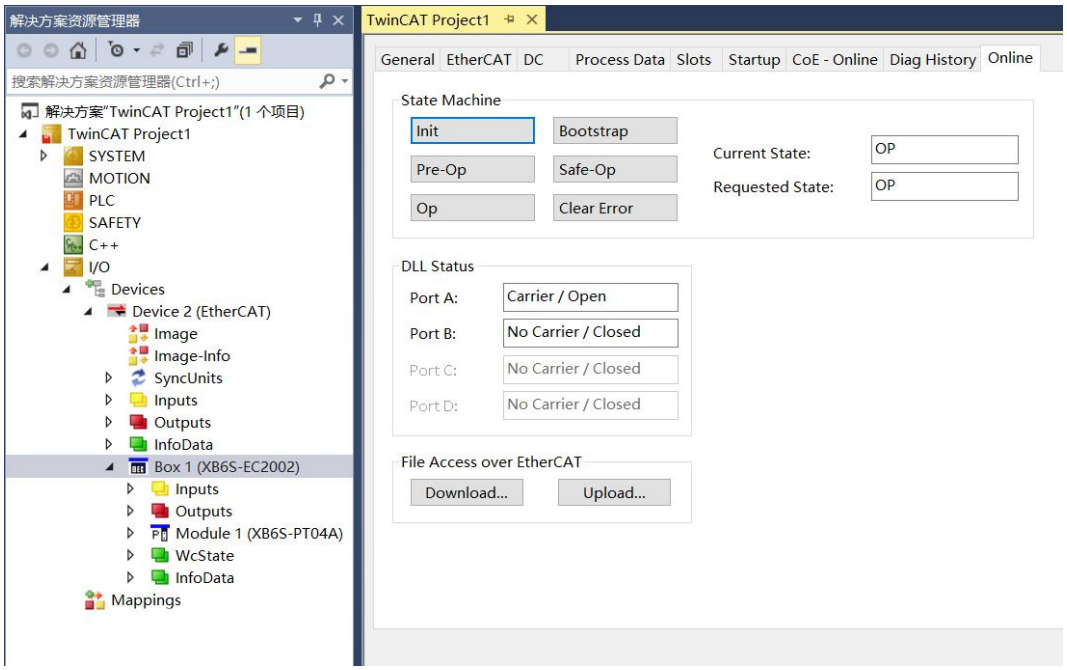
b. Check the "Local Area Connection" network card, as shown in the figure below.



c. In the pop-up window "Scan for boxes", click and select "Yes"; in the pop-up window "Activate Free Run", click and select "Yes", as shown in the following figure.

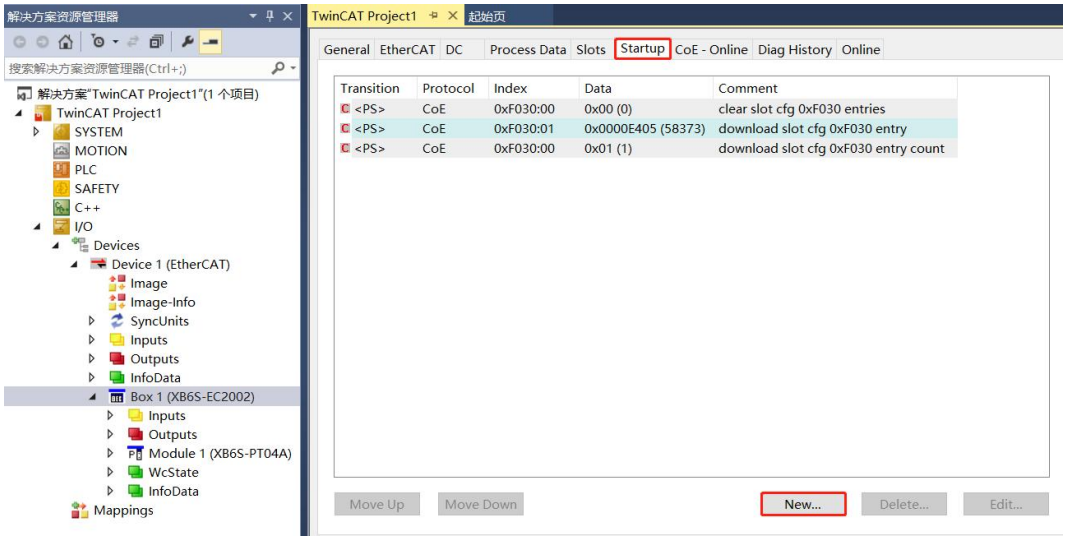


d. After scanning the device, you can see Box 1 (XB6S-EC2002) and Module 1 (XB6S-PT04A) in the left navigation tree. In "Online", you can see that TwinCAT is in "OP" state, and the RUN light of the slave device is always on, as shown in the figure below.

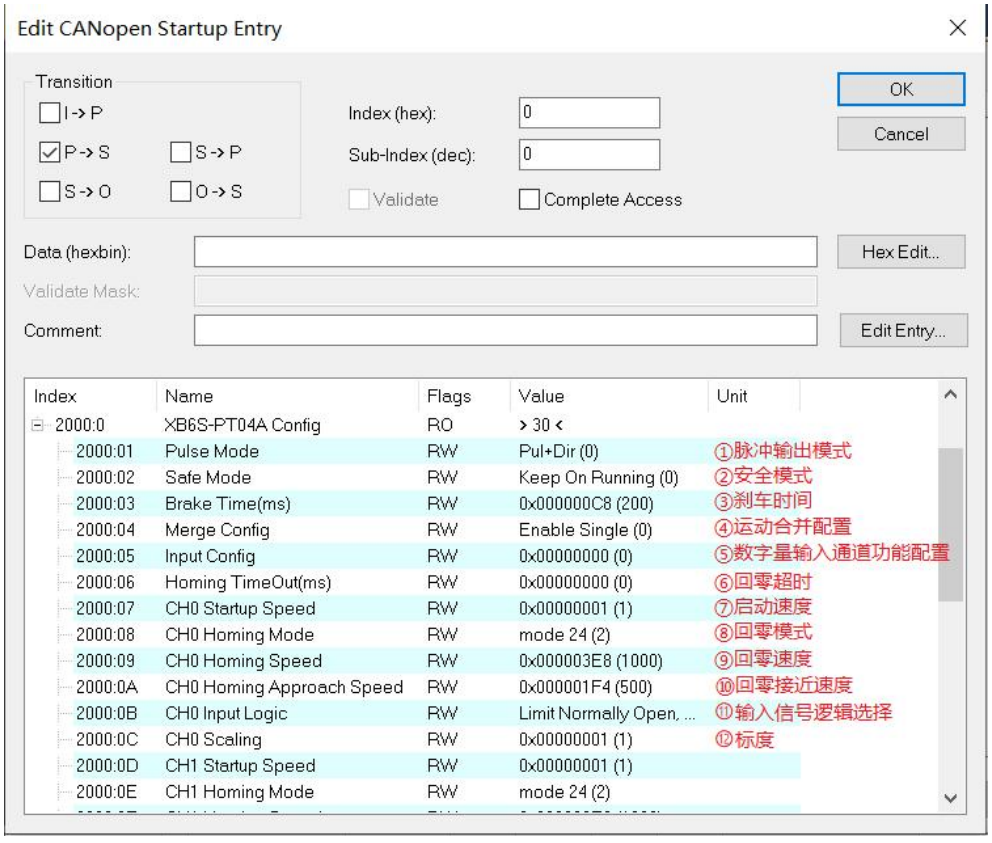


5、Verify basic functionality

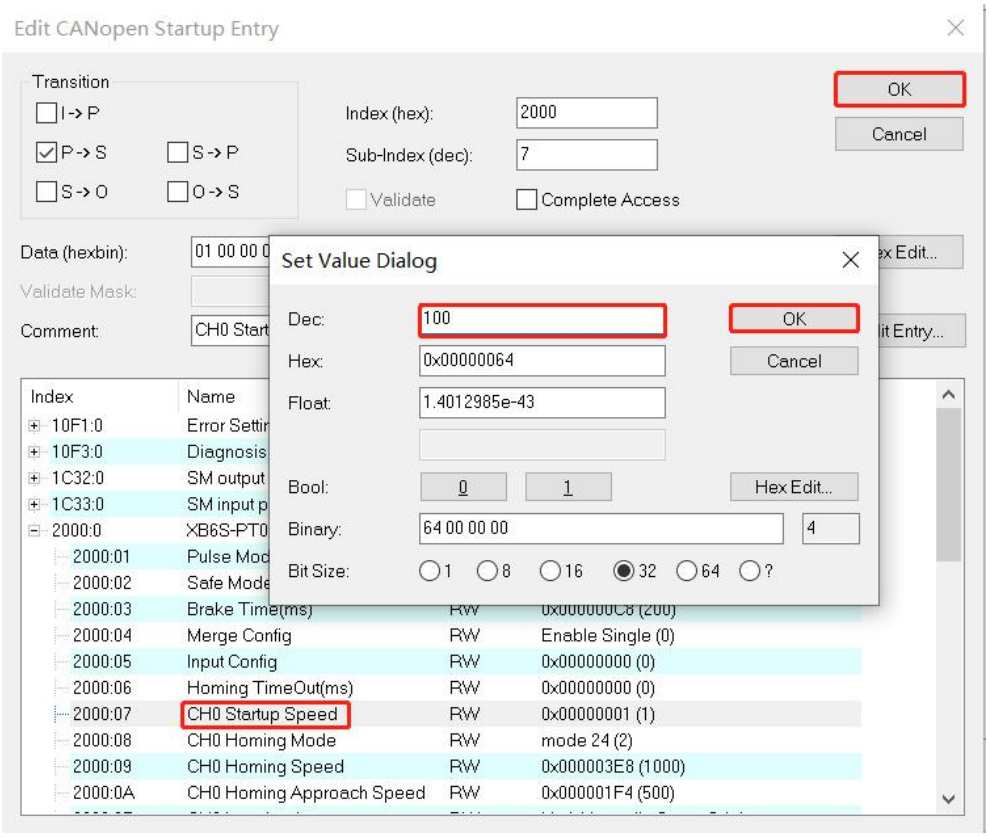
a. Click "Box1 -> Startup -> New" in the left navigation tree to enter the configuration parameter editing page, as shown in the figure below.



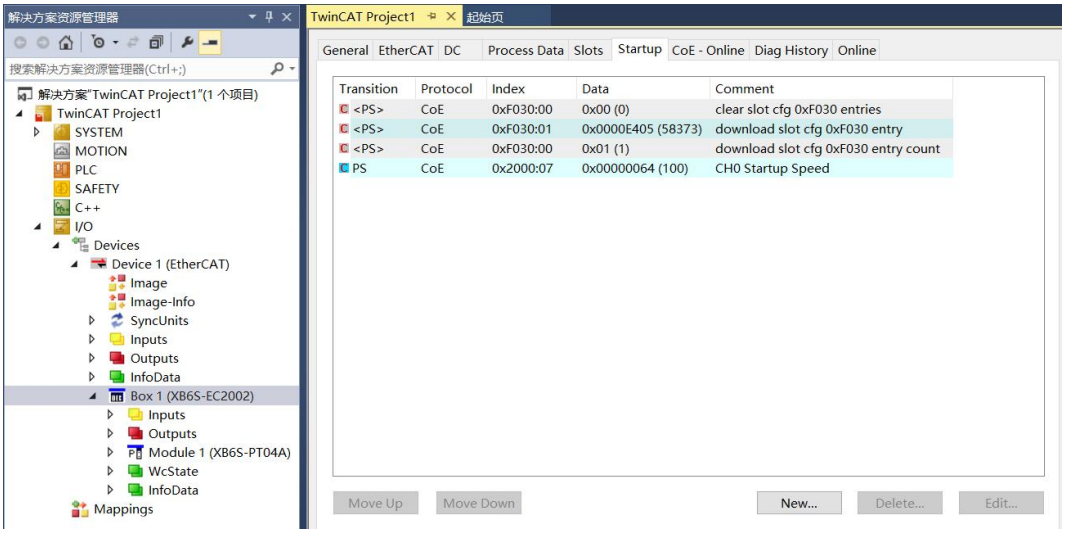
b. In the Edit CANopen Startup Entry pop-up window, click the "+" in front of Index 2000:0 to expand the configuration parameter menu. Click any parameter to set the related configuration, as shown in the figure below.



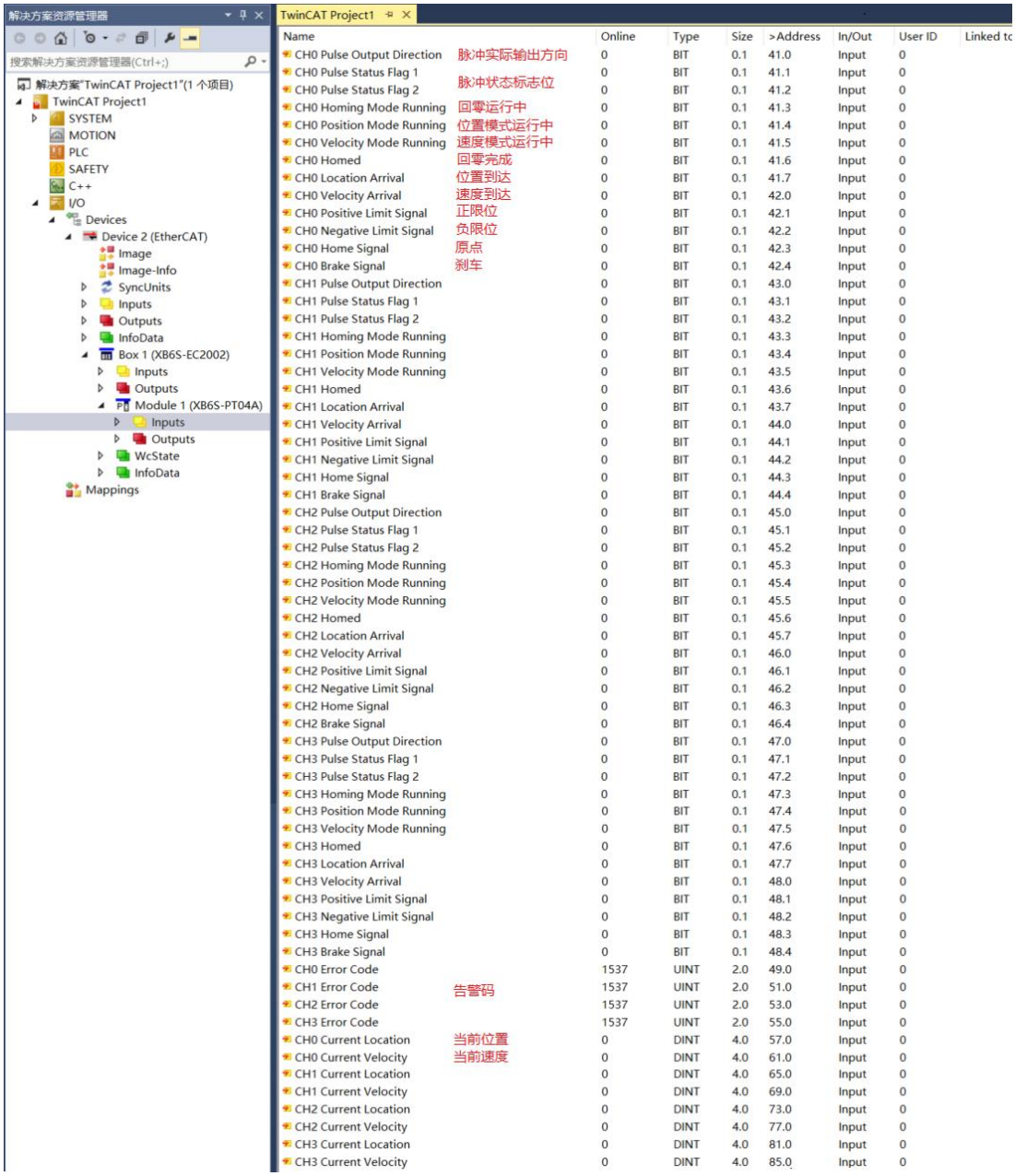
c. For example, to modify the startup speed parameter of channel 0, double-click "CH0 Startup Speed" and modify the parameter value, as shown in the figure below.



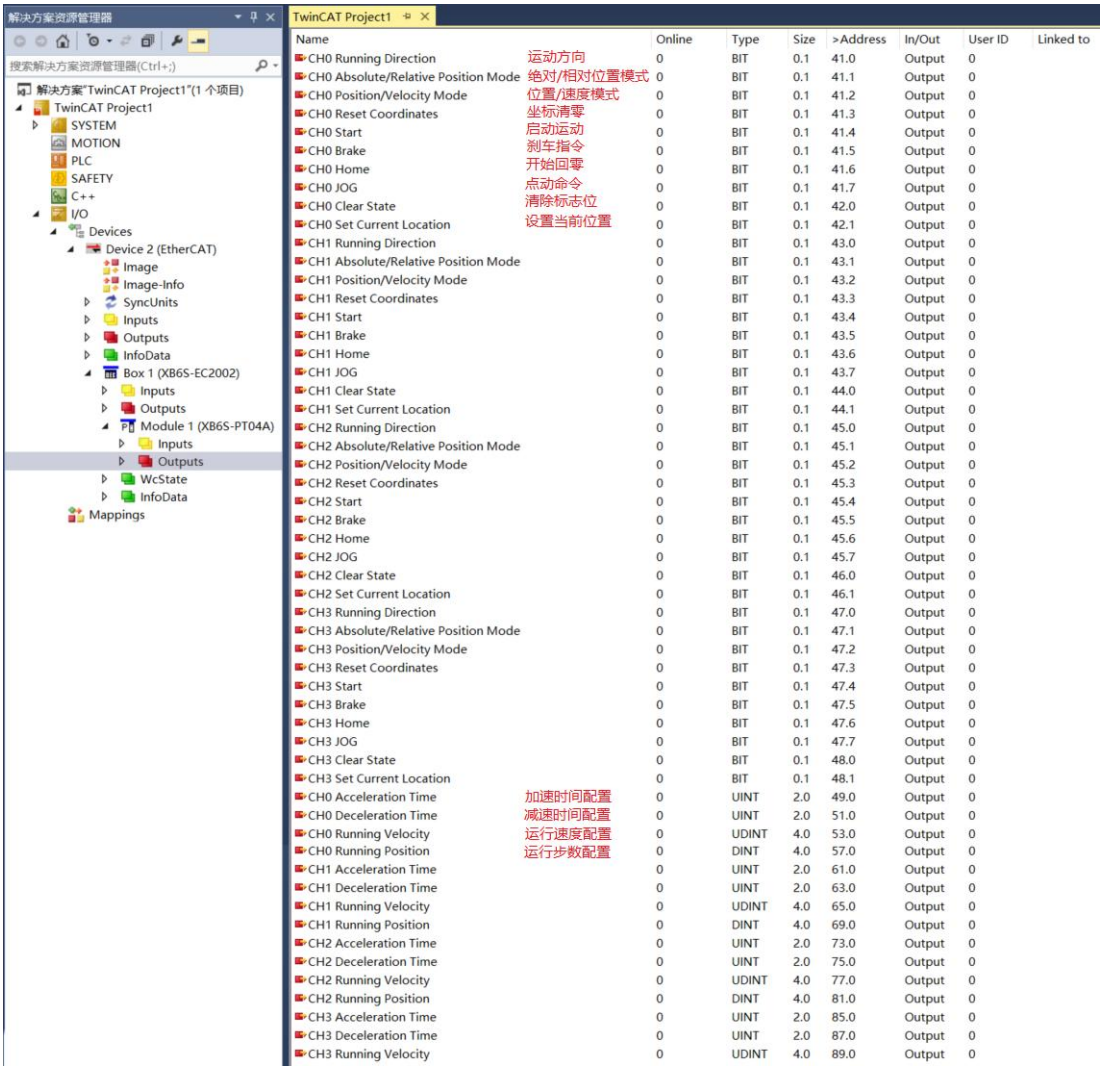
d. After the parameter modification is completed, the modified parameter items and parameter values can be seen under Startup, as shown in the figure below. After the parameter setting is completed, the Reload operation and the module power-on are required to realize the automatic transmission of parameter settings by the master station.



e. The left navigation tree "Module 1 -> Inputs" displays the upstream data of the pulse output module and is used to monitor the status of the module, as shown in the following figure.



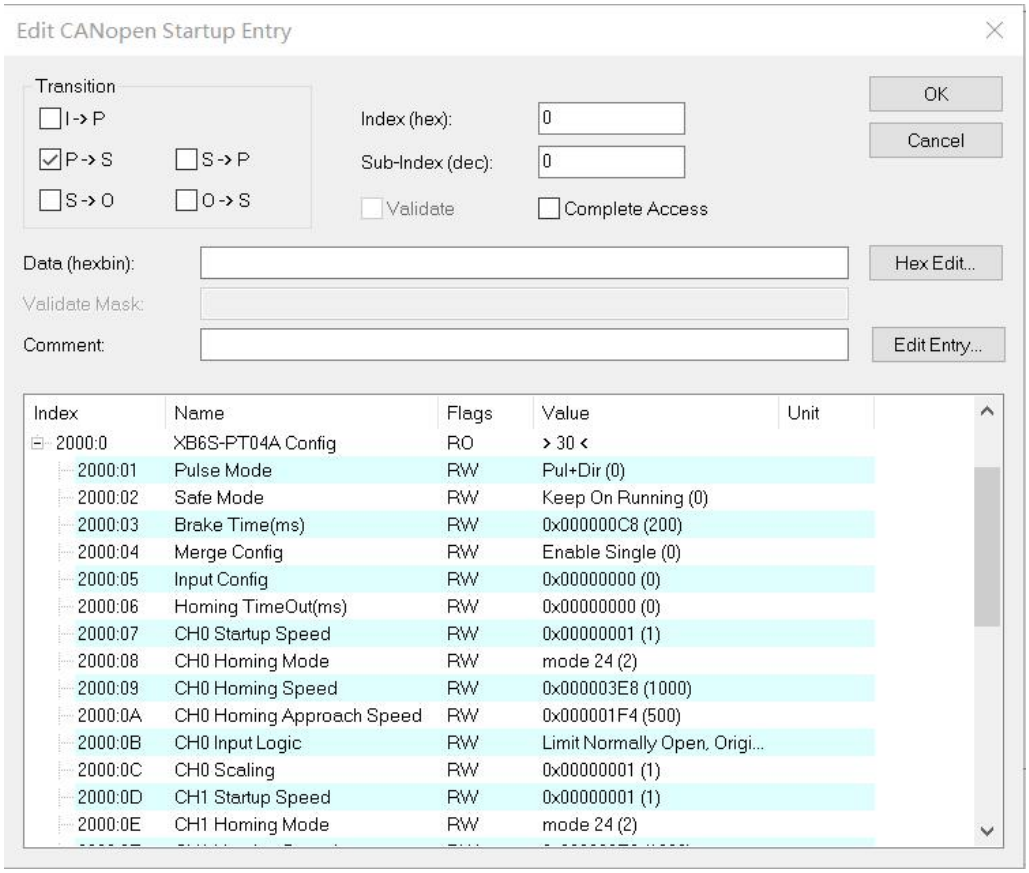
f. The left navigation tree "Module 1 -> Outputs" displays the downstream data of the pulse output module, which is used to monitor the output status of the module, as shown in the following figure.



Module Functionality Examples

- **Channel 0 runs 50,000 pulses in the forward direction at a speed of 100,000 Hz**

a. Configure the configuration parameters as shown in the following figure.

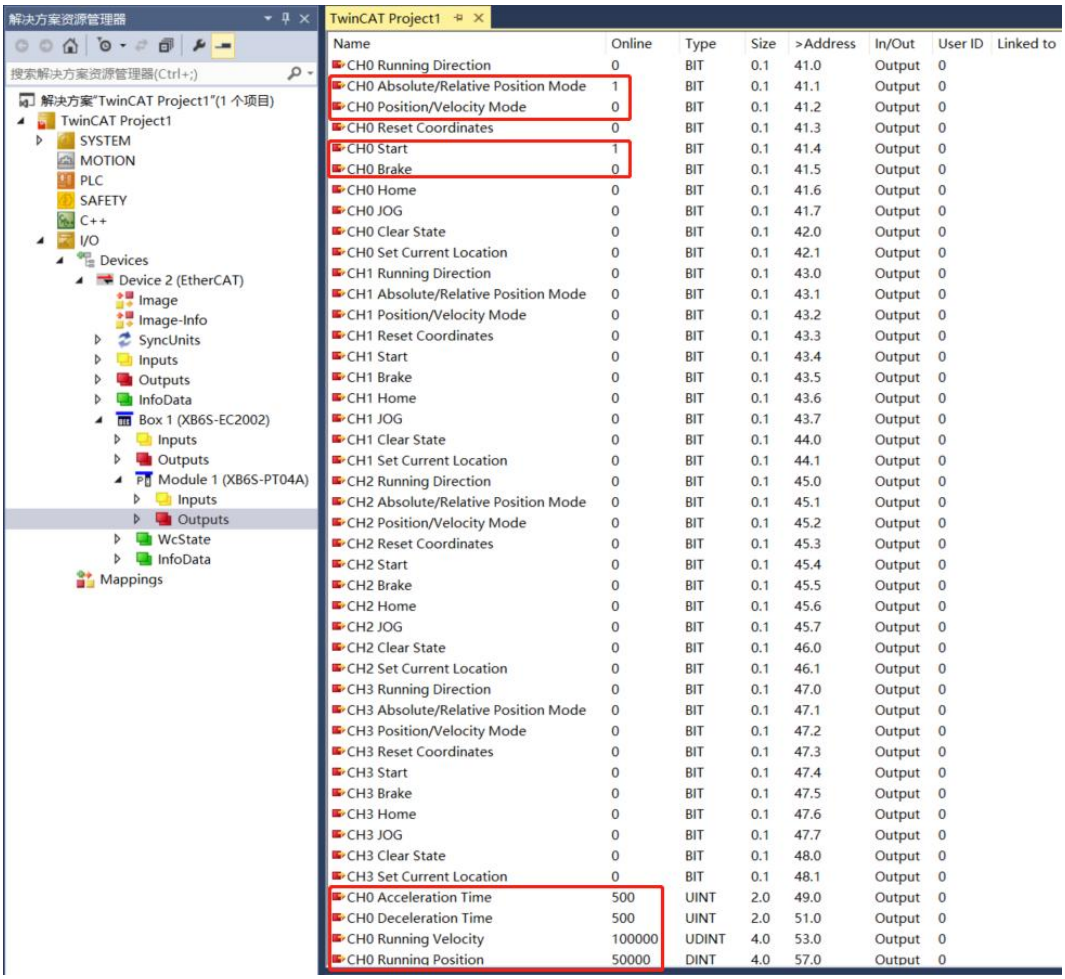


b. Set channel 0 to relative position mode;

c. Configure channel 0 to run with 50000 steps, 100000 Hz running speed, and 500 acceleration/deceleration time.

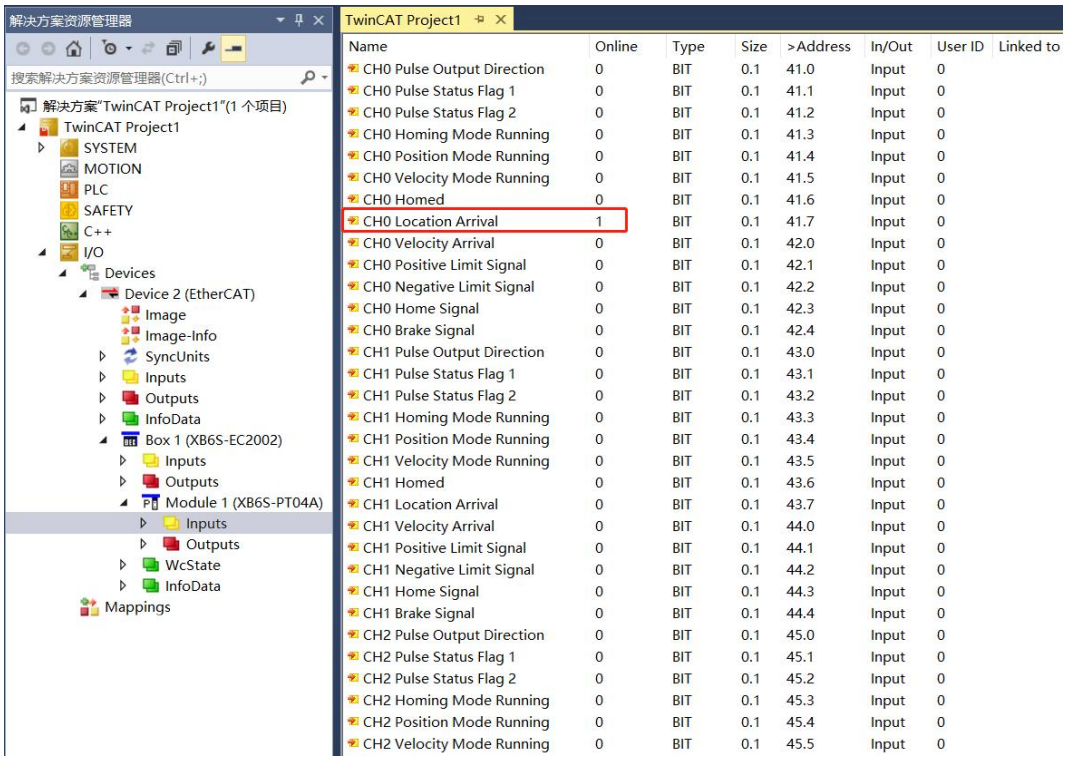
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1, as shown in the figure below.

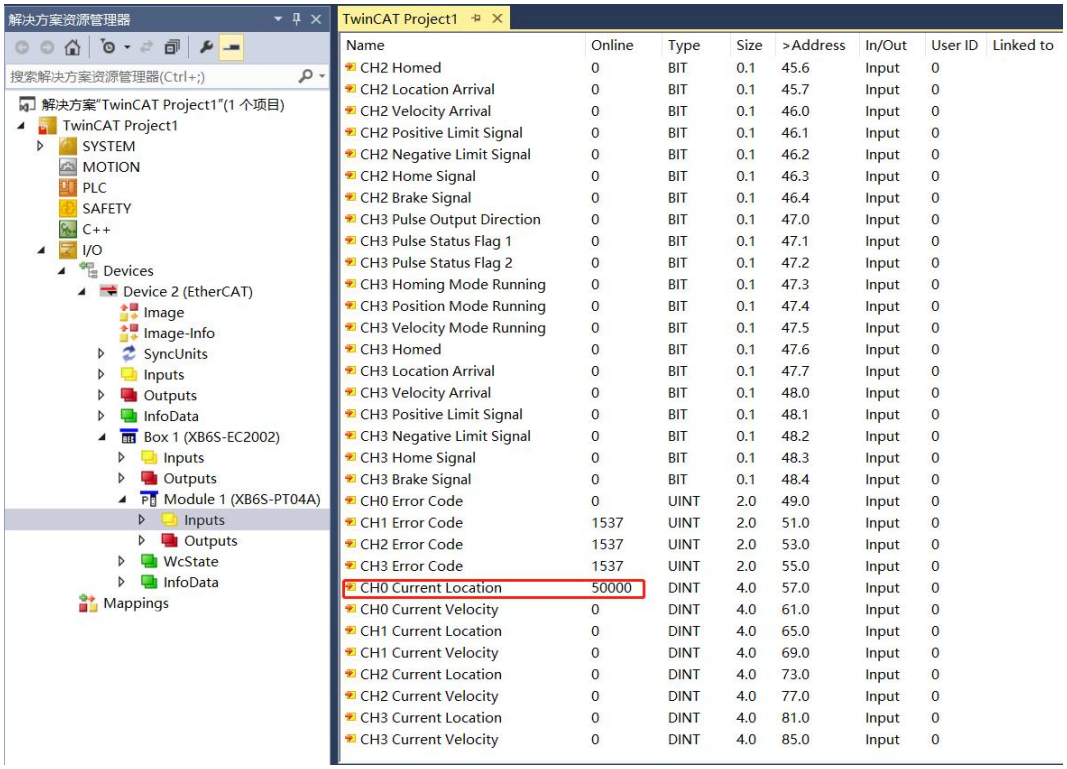


Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH0 Running Direction	0	BIT	0.1	41.0	Output	0	
CH0 Absolute/Relative Position Mode	1	BIT	0.1	41.1	Output	0	
CH0 Position/Velocity Mode	0	BIT	0.1	41.2	Output	0	
CH0 Reset Coordinates	0	BIT	0.1	41.3	Output	0	
CH0 Start	1	BIT	0.1	41.4	Output	0	
CH0 Brake	0	BIT	0.1	41.5	Output	0	
CH0 Home	0	BIT	0.1	41.6	Output	0	
CH0 JOG	0	BIT	0.1	41.7	Output	0	
CH0 Clear State	0	BIT	0.1	42.0	Output	0	
CH0 Set Current Location	0	BIT	0.1	42.1	Output	0	
CH1 Running Direction	0	BIT	0.1	43.0	Output	0	
CH1 Absolute/Relative Position Mode	0	BIT	0.1	43.1	Output	0	
CH1 Position/Velocity Mode	0	BIT	0.1	43.2	Output	0	
CH1 Reset Coordinates	0	BIT	0.1	43.3	Output	0	
CH1 Start	0	BIT	0.1	43.4	Output	0	
CH1 Brake	0	BIT	0.1	43.5	Output	0	
CH1 Home	0	BIT	0.1	43.6	Output	0	
CH1 JOG	0	BIT	0.1	43.7	Output	0	
CH1 Clear State	0	BIT	0.1	44.0	Output	0	
CH1 Set Current Location	0	BIT	0.1	44.1	Output	0	
CH2 Running Direction	0	BIT	0.1	45.0	Output	0	
CH2 Absolute/Relative Position Mode	0	BIT	0.1	45.1	Output	0	
CH2 Position/Velocity Mode	0	BIT	0.1	45.2	Output	0	
CH2 Reset Coordinates	0	BIT	0.1	45.3	Output	0	
CH2 Start	0	BIT	0.1	45.4	Output	0	
CH2 Brake	0	BIT	0.1	45.5	Output	0	
CH2 Home	0	BIT	0.1	45.6	Output	0	
CH2 JOG	0	BIT	0.1	45.7	Output	0	
CH2 Clear State	0	BIT	0.1	46.0	Output	0	
CH2 Set Current Location	0	BIT	0.1	46.1	Output	0	
CH3 Running Direction	0	BIT	0.1	47.0	Output	0	
CH3 Absolute/Relative Position Mode	0	BIT	0.1	47.1	Output	0	
CH3 Position/Velocity Mode	0	BIT	0.1	47.2	Output	0	
CH3 Reset Coordinates	0	BIT	0.1	47.3	Output	0	
CH3 Start	0	BIT	0.1	47.4	Output	0	
CH3 Brake	0	BIT	0.1	47.5	Output	0	
CH3 Home	0	BIT	0.1	47.6	Output	0	
CH3 JOG	0	BIT	0.1	47.7	Output	0	
CH3 Clear State	0	BIT	0.1	48.0	Output	0	
CH3 Set Current Location	0	BIT	0.1	48.1	Output	0	
CH0 Acceleration Time	500	UINT	2.0	49.0	Output	0	
CH0 Deceleration Time	500	UINT	2.0	51.0	Output	0	
CH0 Running Velocity	100000	UDINT	4.0	53.0	Output	0	
CH0 Running Position	50000	DINT	4.0	57.0	Output	0	

f. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.

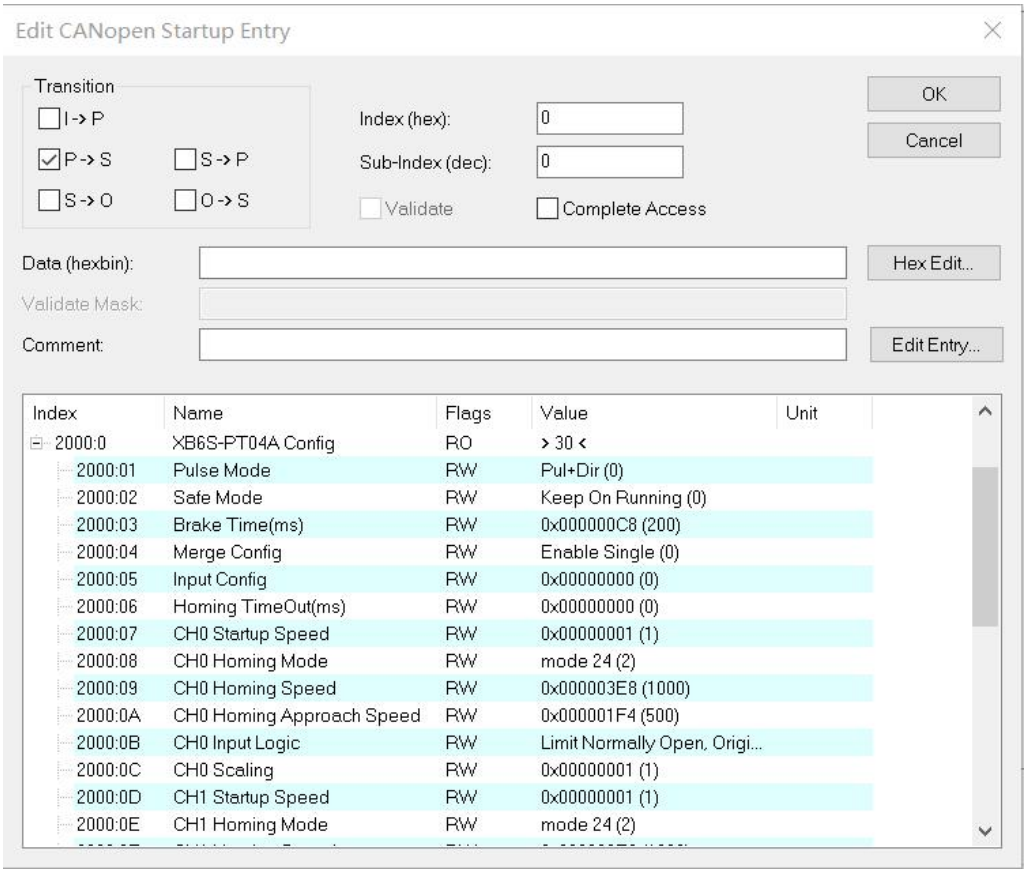


g. You can also see that the current coordinate of channel 0 is 50000, as shown in the figure below.

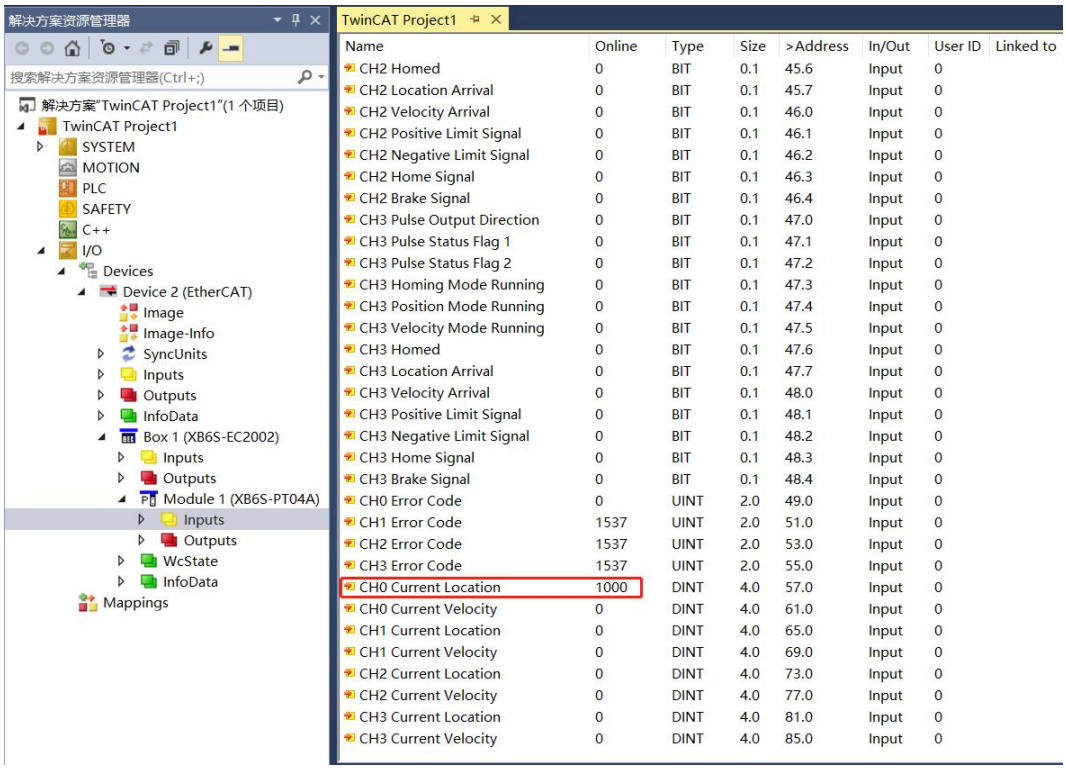


◆ **Channel 0 is currently at 1000, moves to -20000, and runs at a speed of 100000 Hz**

a. Configure the configuration parameters as shown in the following figure.



b. The current position of channel 0 is 1000, as shown in the figure below.

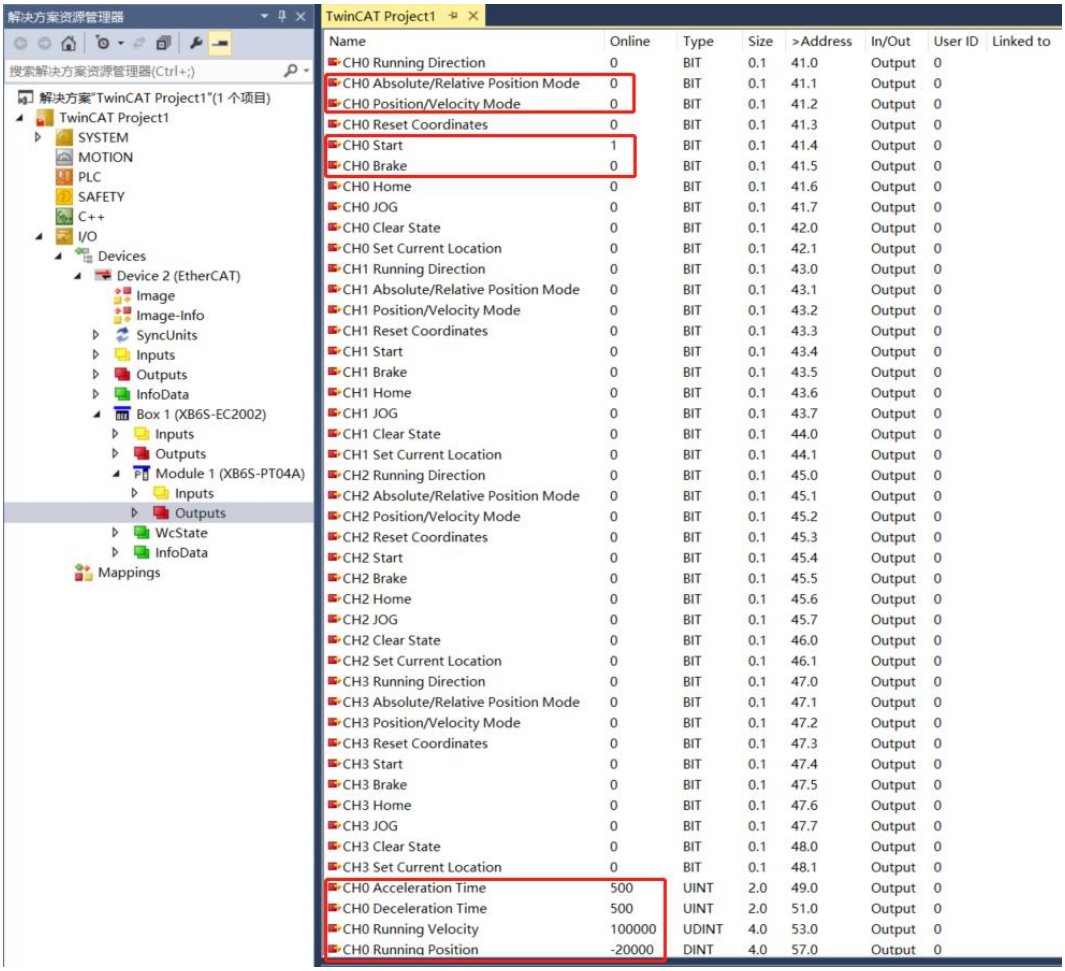


c. Set channel 0 to absolute position mode;

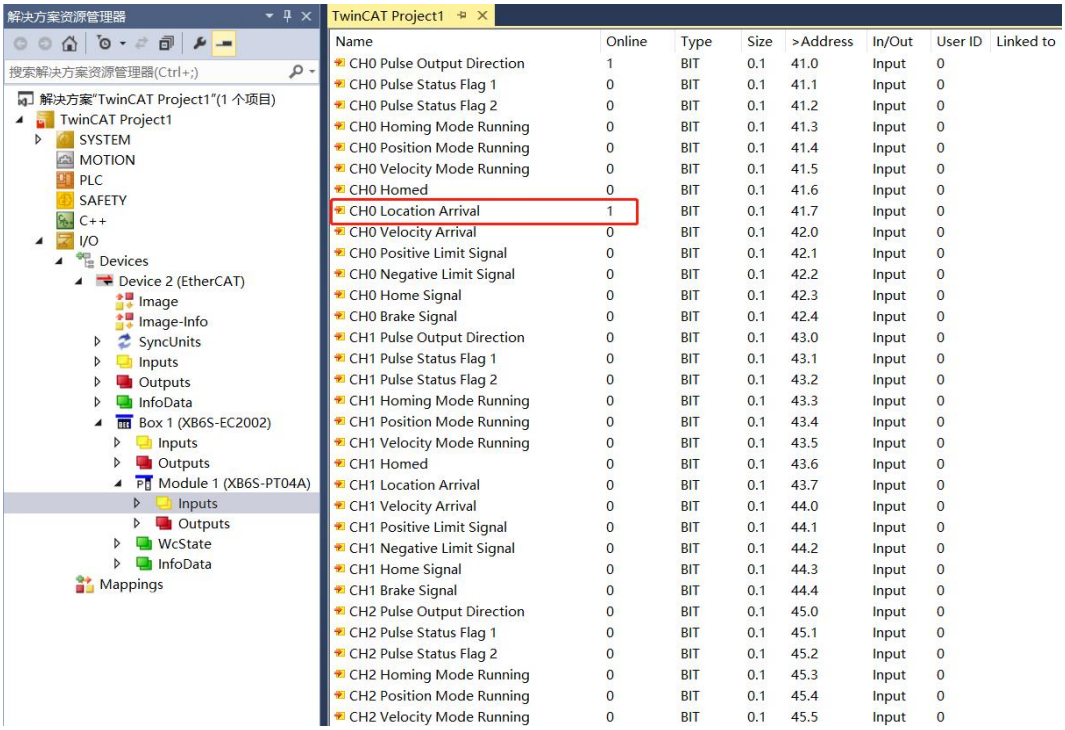
d. Configure channel 0 to run at -20000 steps, 100000 Hz speed, and 500 acceleration and deceleration times;

e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

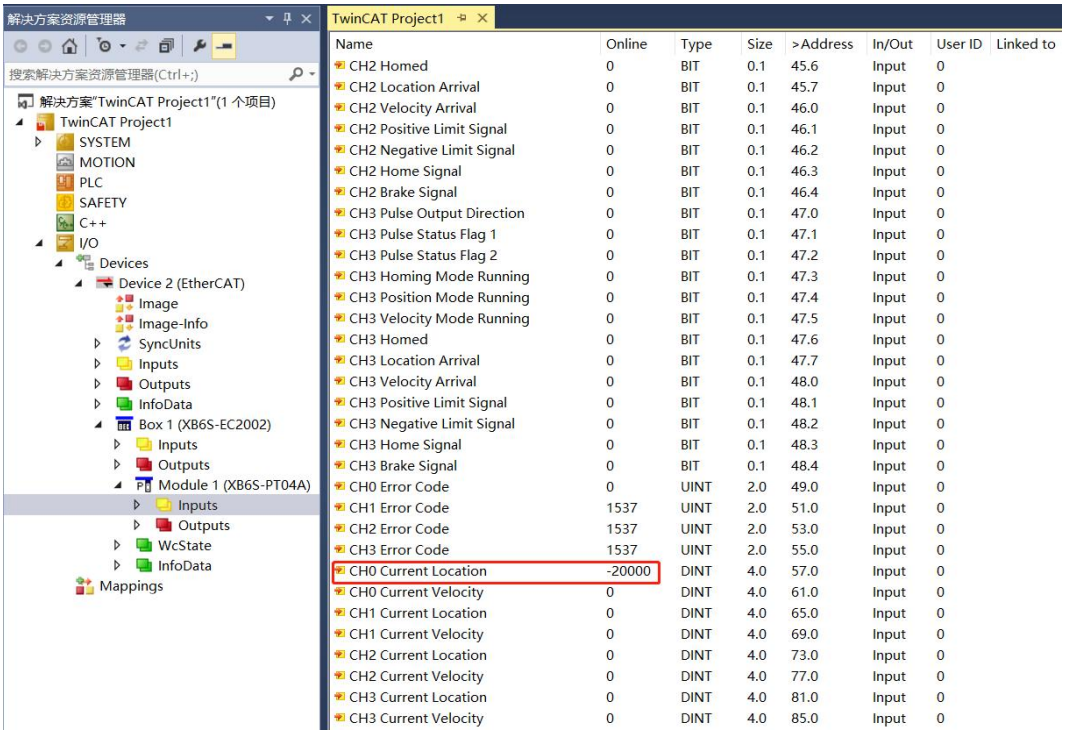
f. Set the start command of channel 0 from 0 to 1, as shown in the figure below.



g. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.

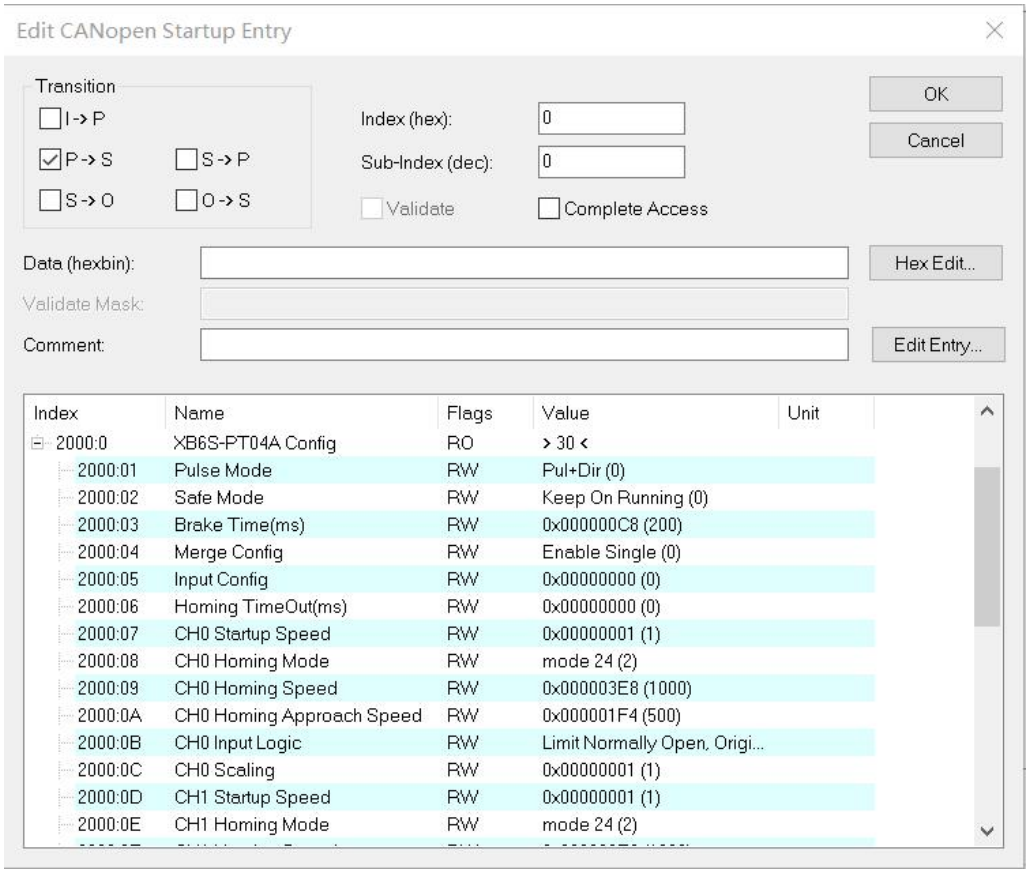


h. You can also see that the current coordinate of channel 0 is -20000, as shown in the figure below.



- **Channel 0 turns on speed mode, running speed 100000Hz**

a. Configure the configuration parameters as shown in the following figure.

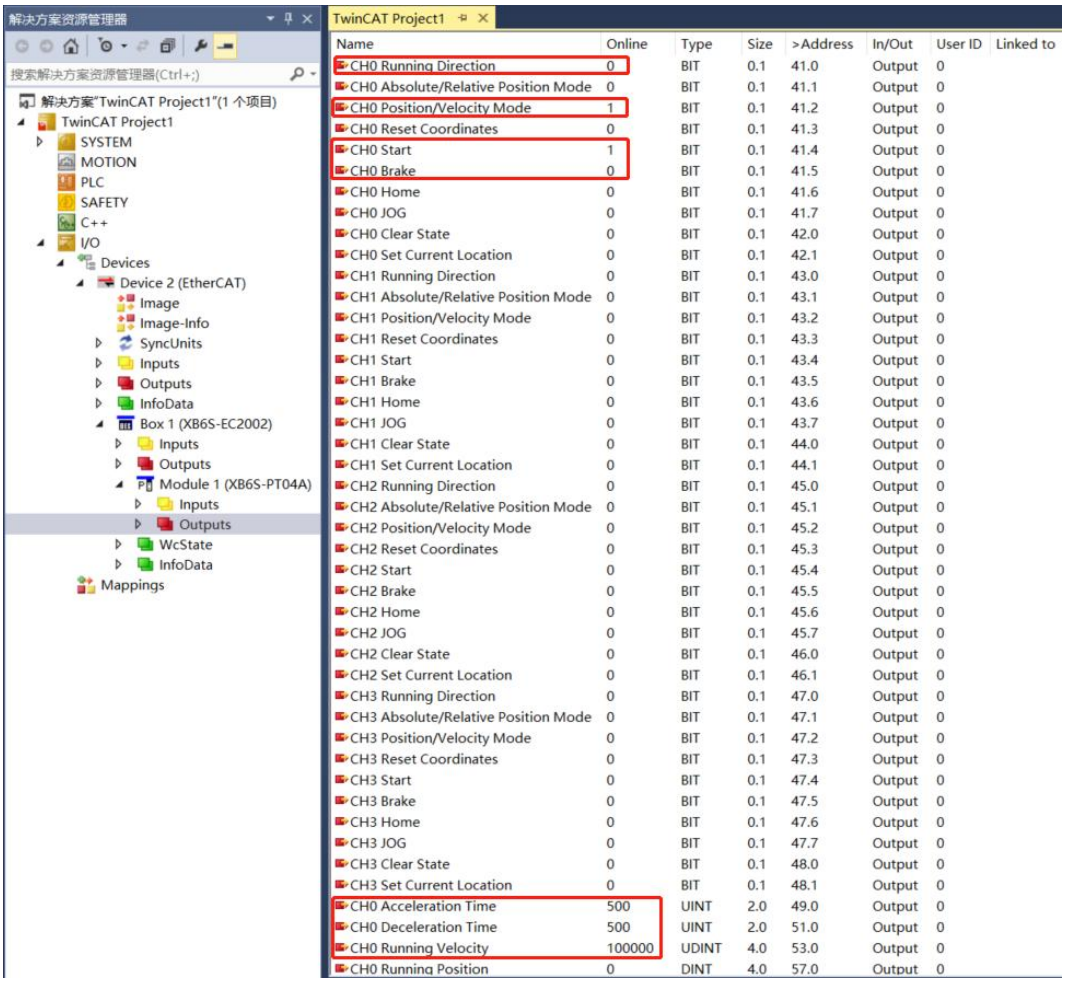


b. Set channel 0 to speed mode;

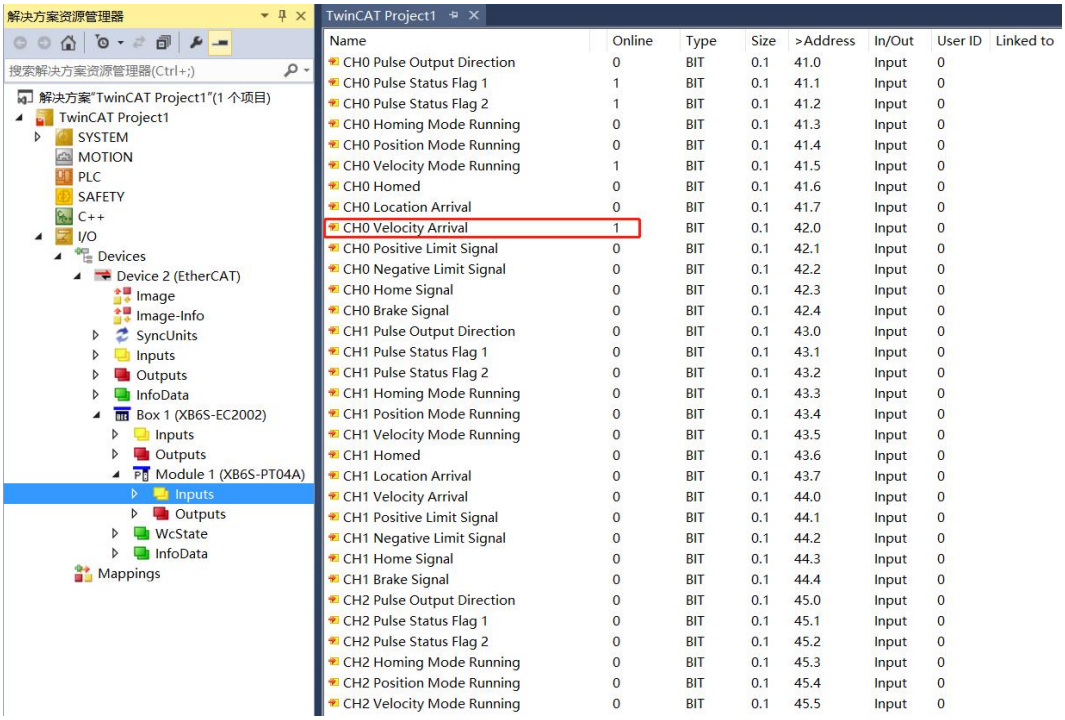
c. Configure channel 0 to run at a speed of 100000 Hz and move in a forward direction of 0;

d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

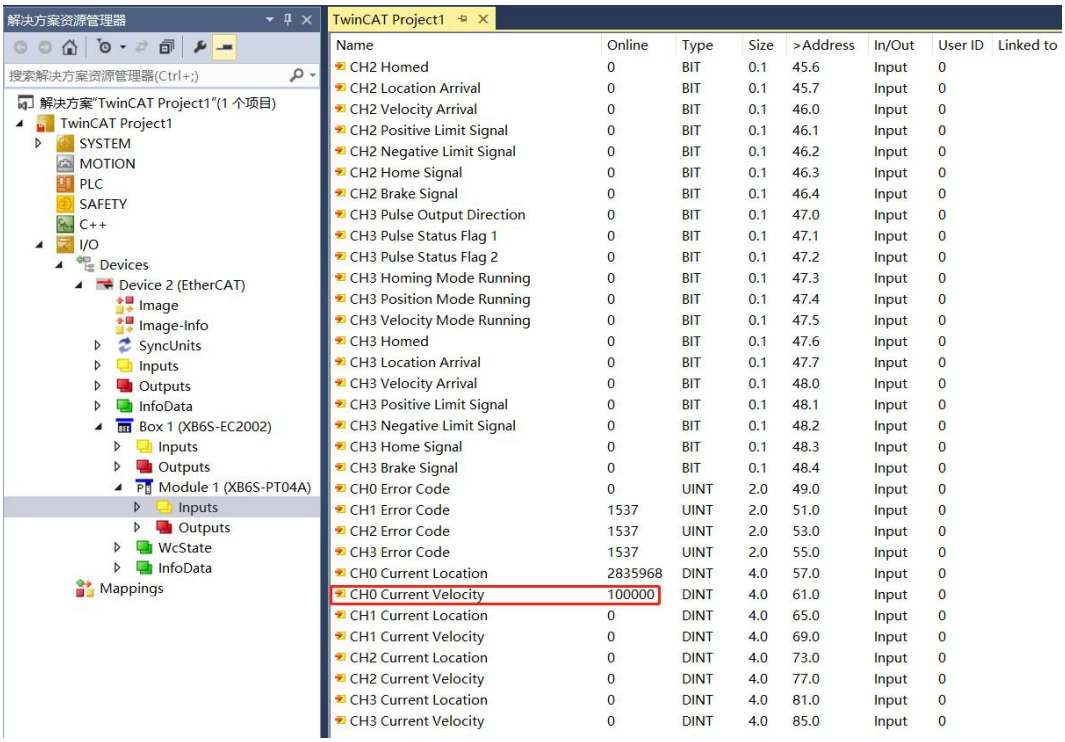
e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.



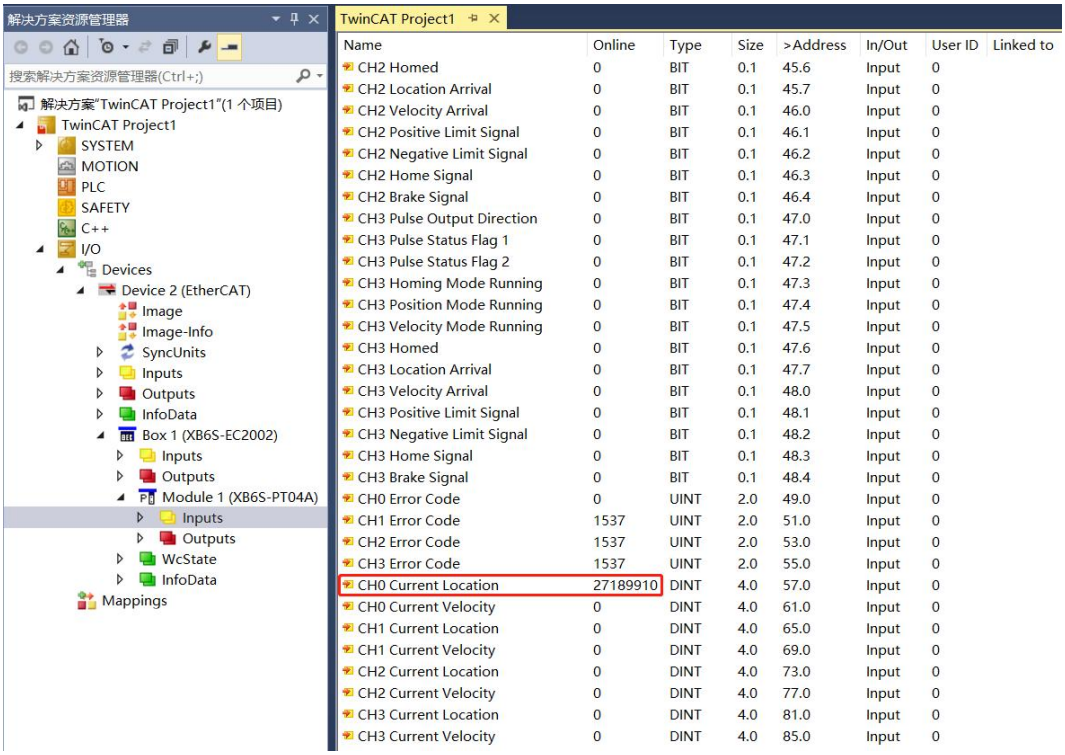
f. During the motion, you can see that the channel 0 speed arrival is set to 1, as shown in the figure below.



g. During the movement, the actual running speed can also be 100000Hz, as shown in the figure below.

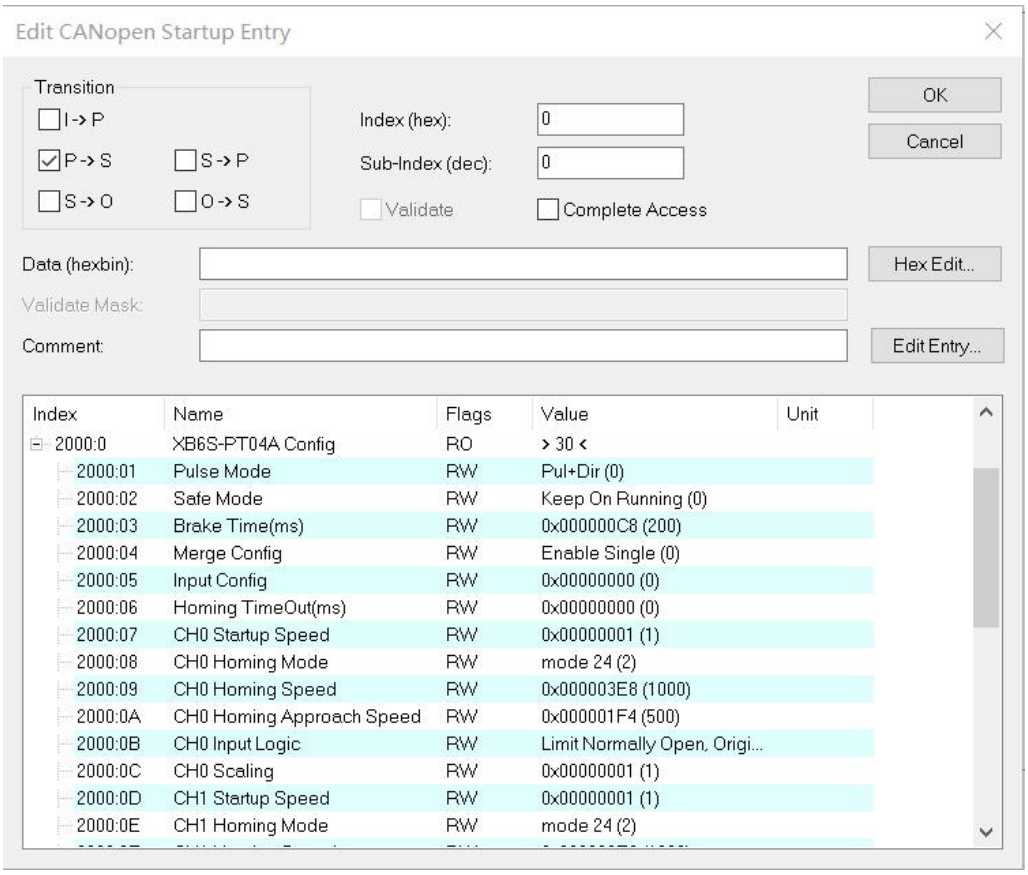


h. Entering a brake command or triggering a positive limit signal can stop the movement, as shown in the figure below.



◆ **Channel 0 runs at 100000Hz, in jog mode**

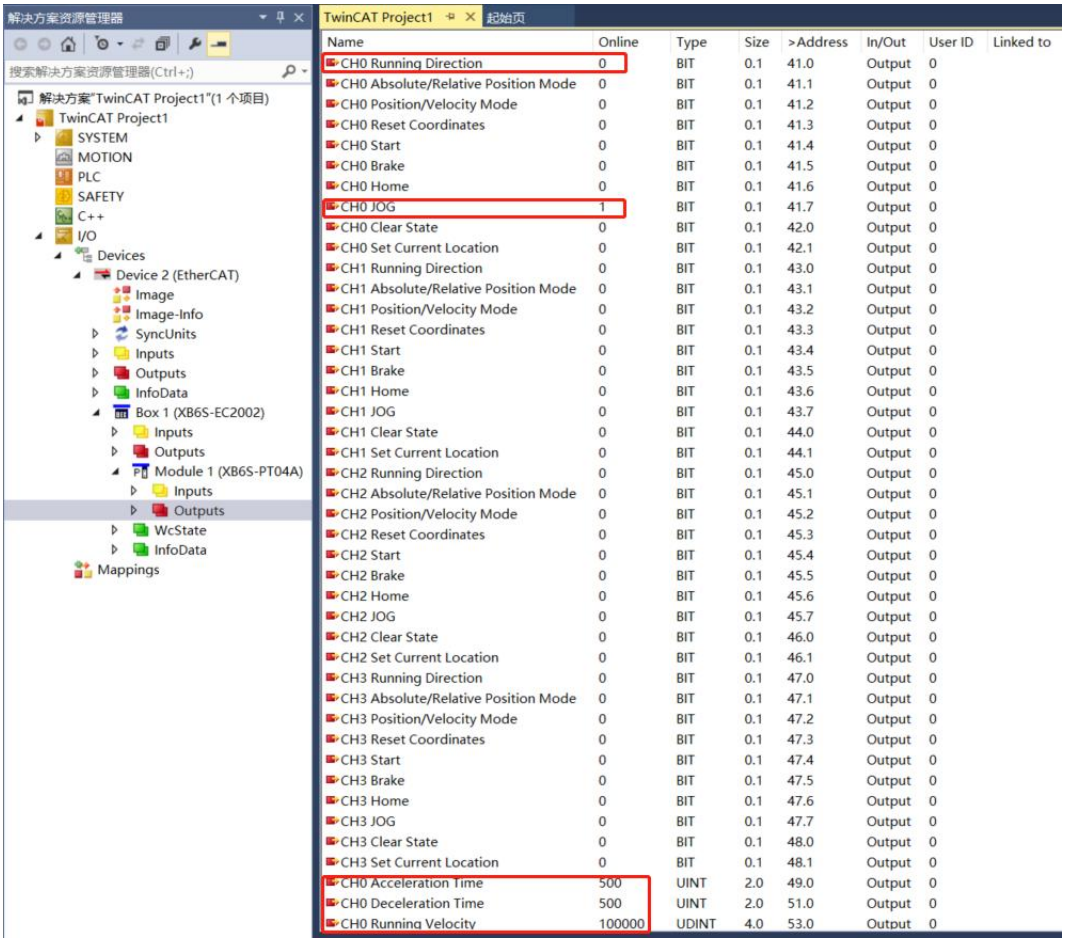
a. Configure the configuration parameters as shown in the following figure.



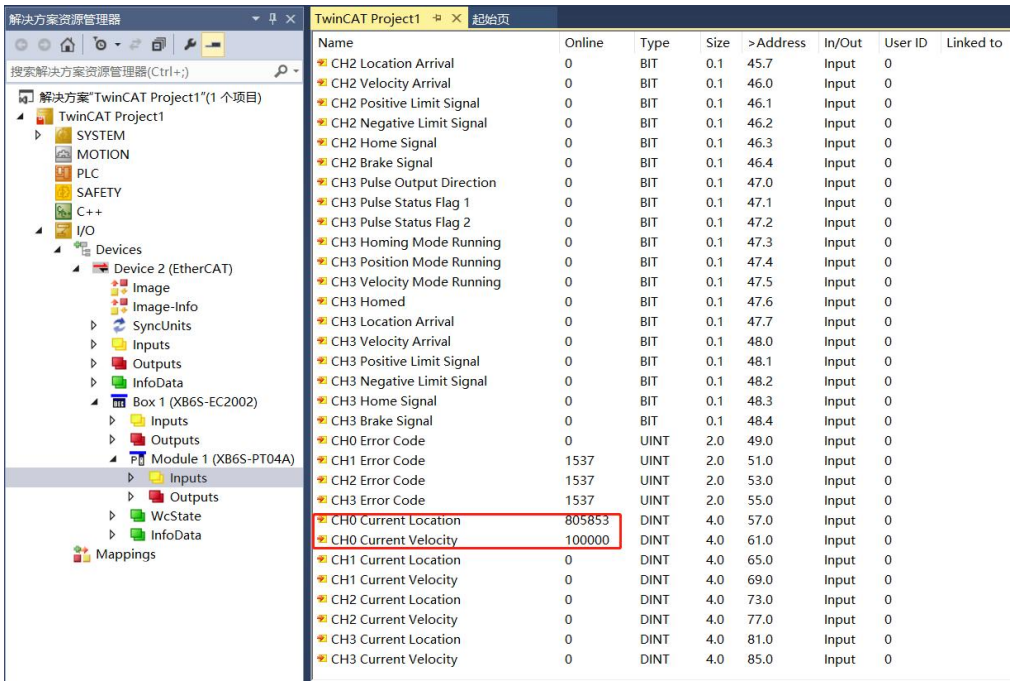
b. Configure channel 0 to run at a speed of 100000, run in a direction of 0 forward, and set the acceleration and deceleration times to 500;

c. Make sure channel 0 is in a static state;

d. Set the jog command of channel 0 from 0 to 1 to start movement, as shown in the figure below.

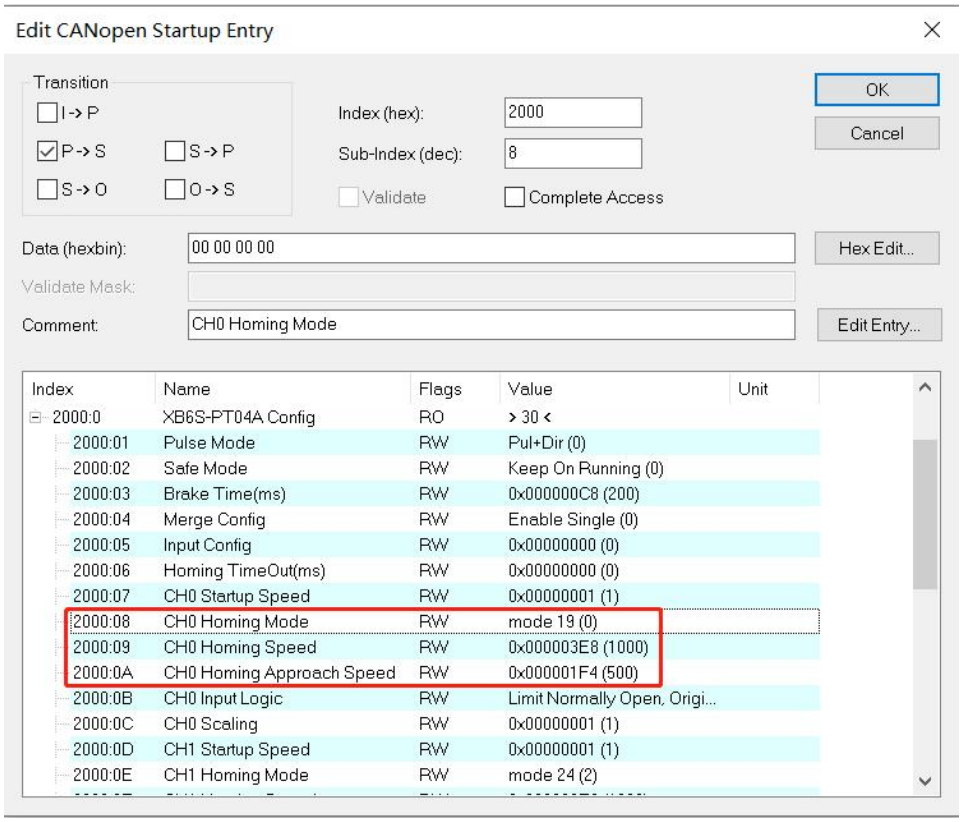


e. During the motion, you can see the actual running speed and real-time position of channel 0, as shown in the figure below. Inputting a brake command or triggering a positive limit signal can stop the motion.



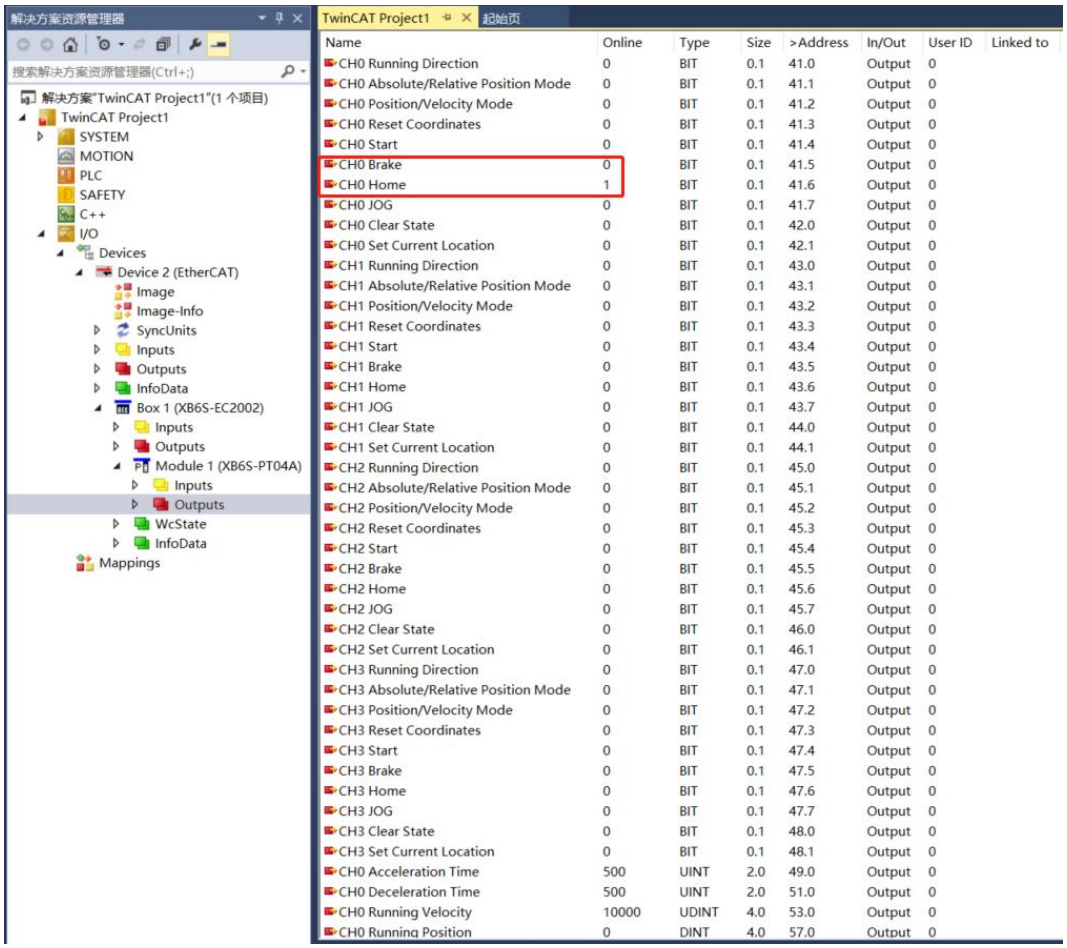
◆ **Channel 0 turns on and returns to zero**

a. Configure the configuration parameters, select the homing mode and set the homing speed and homing approach speed, as shown in the figure below.



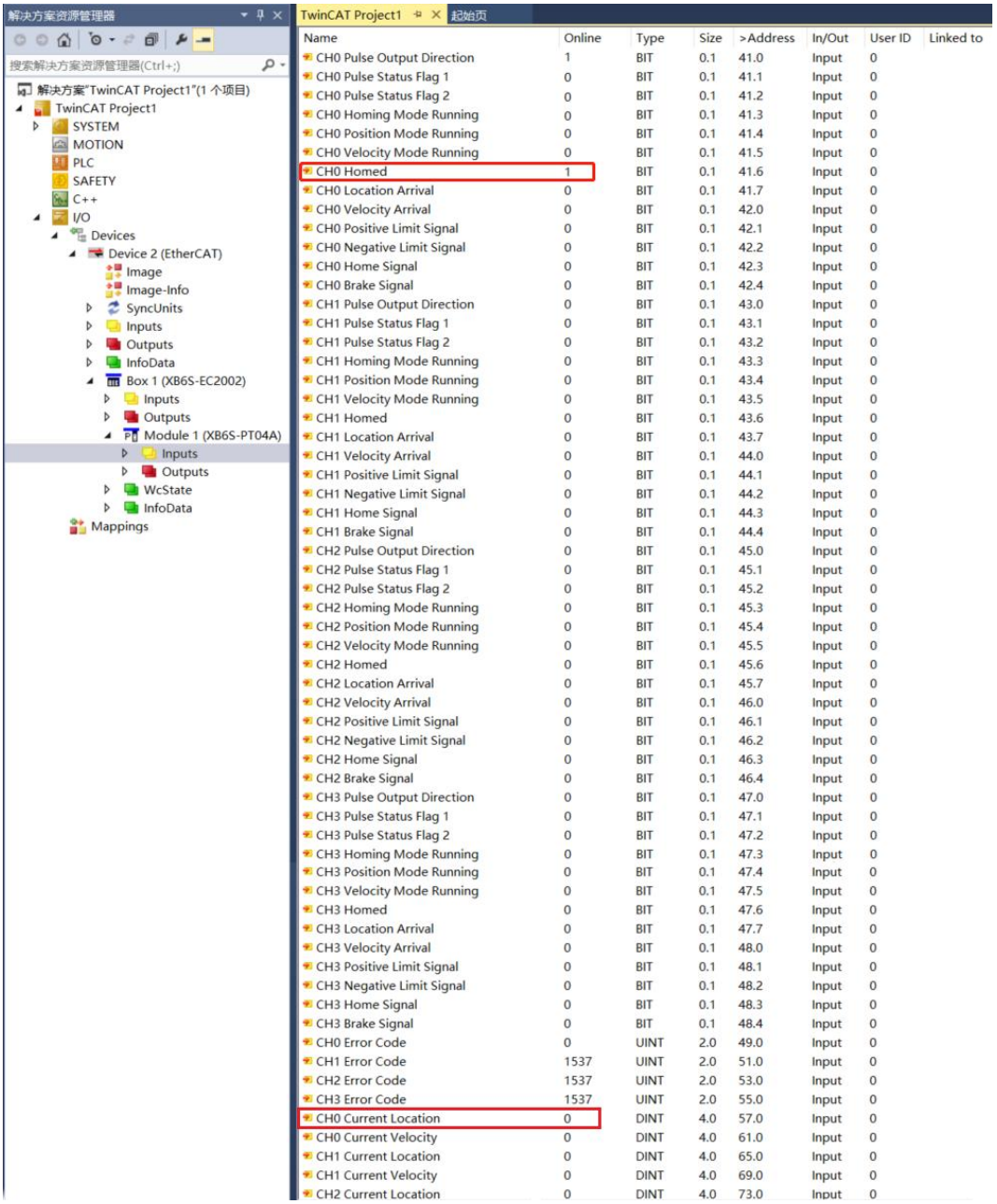
b. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

c. Set the return to zero command of channel 0 from 0 to 1, as shown in the figure below.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH0 Running Direction	0	BIT	0.1	41.0	Output	0	
CH0 Absolute/Relative Position Mode	0	BIT	0.1	41.1	Output	0	
CH0 Position/Velocity Mode	0	BIT	0.1	41.2	Output	0	
CH0 Reset Coordinates	0	BIT	0.1	41.3	Output	0	
CH0 Start	0	BIT	0.1	41.4	Output	0	
CH0 Brake	0	BIT	0.1	41.5	Output	0	
CH0 Home	1	BIT	0.1	41.6	Output	0	
CH0 JOG	0	BIT	0.1	41.7	Output	0	
CH0 Clear State	0	BIT	0.1	42.0	Output	0	
CH0 Set Current Location	0	BIT	0.1	42.1	Output	0	
CH1 Running Direction	0	BIT	0.1	43.0	Output	0	
CH1 Absolute/Relative Position Mode	0	BIT	0.1	43.1	Output	0	
CH1 Position/Velocity Mode	0	BIT	0.1	43.2	Output	0	
CH1 Reset Coordinates	0	BIT	0.1	43.3	Output	0	
CH1 Start	0	BIT	0.1	43.4	Output	0	
CH1 Brake	0	BIT	0.1	43.5	Output	0	
CH1 Home	0	BIT	0.1	43.6	Output	0	
CH1 JOG	0	BIT	0.1	43.7	Output	0	
CH1 Clear State	0	BIT	0.1	44.0	Output	0	
CH1 Set Current Location	0	BIT	0.1	44.1	Output	0	
CH2 Running Direction	0	BIT	0.1	45.0	Output	0	
CH2 Absolute/Relative Position Mode	0	BIT	0.1	45.1	Output	0	
CH2 Position/Velocity Mode	0	BIT	0.1	45.2	Output	0	
CH2 Reset Coordinates	0	BIT	0.1	45.3	Output	0	
CH2 Start	0	BIT	0.1	45.4	Output	0	
CH2 Brake	0	BIT	0.1	45.5	Output	0	
CH2 Home	0	BIT	0.1	45.6	Output	0	
CH2 JOG	0	BIT	0.1	45.7	Output	0	
CH2 Clear State	0	BIT	0.1	46.0	Output	0	
CH2 Set Current Location	0	BIT	0.1	46.1	Output	0	
CH3 Running Direction	0	BIT	0.1	47.0	Output	0	
CH3 Absolute/Relative Position Mode	0	BIT	0.1	47.1	Output	0	
CH3 Position/Velocity Mode	0	BIT	0.1	47.2	Output	0	
CH3 Reset Coordinates	0	BIT	0.1	47.3	Output	0	
CH3 Start	0	BIT	0.1	47.4	Output	0	
CH3 Brake	0	BIT	0.1	47.5	Output	0	
CH3 Home	0	BIT	0.1	47.6	Output	0	
CH3 JOG	0	BIT	0.1	47.7	Output	0	
CH3 Clear State	0	BIT	0.1	48.0	Output	0	
CH3 Set Current Location	0	BIT	0.1	48.1	Output	0	
CH0 Acceleration Time	500	UINT	2.0	49.0	Output	0	
CH0 Deceleration Time	500	UINT	2.0	51.0	Output	0	
CH0 Running Velocity	10000	UDINT	4.0	53.0	Output	0	
CH0 Running Position	0	DINT	4.0	57.0	Output	0	

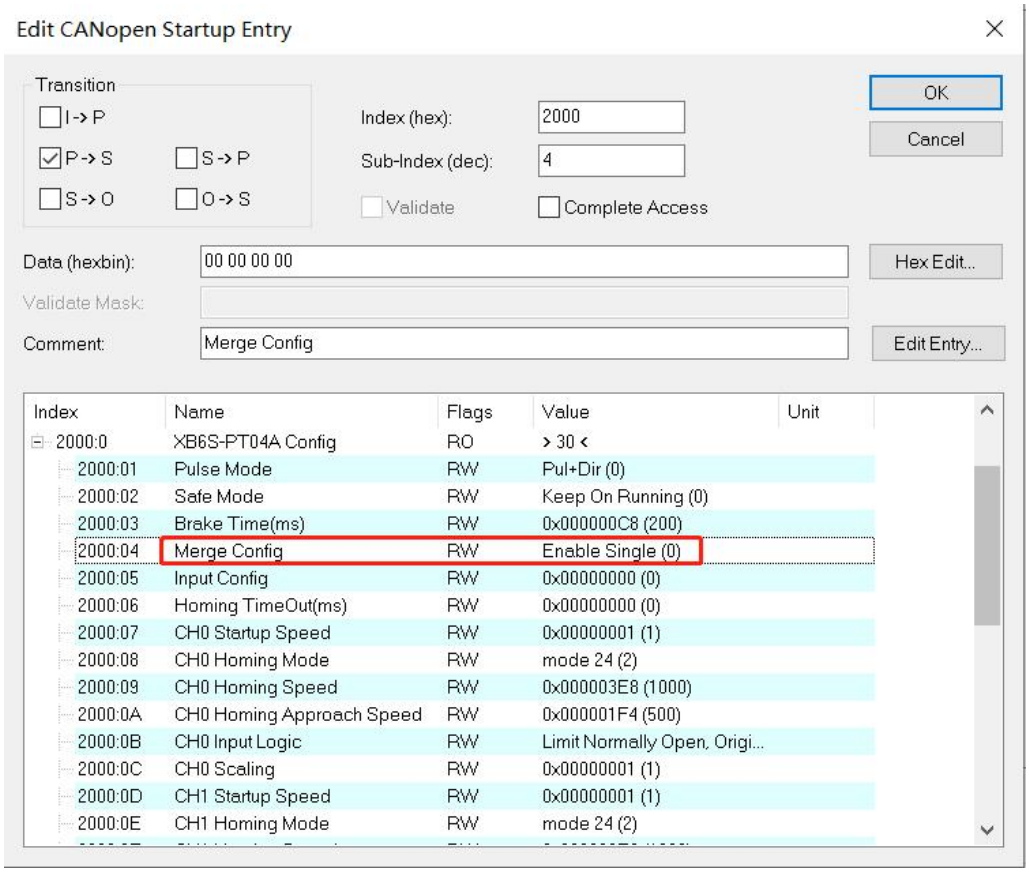
d. Homing mode 19 requires input of origin signal. After inputting the origin signal, it decelerates to 0 and moves in the negative direction again at the homing approach speed until the origin signal disappears. Stop moving and homing is completed. You can see that the coordinates of channel 0 are cleared and the homing is set to 1, as shown in the figure below.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH0 Pulse Output Direction	1	BIT	0.1	41.0	Input	0	
CH0 Pulse Status Flag 1	0	BIT	0.1	41.1	Input	0	
CH0 Pulse Status Flag 2	0	BIT	0.1	41.2	Input	0	
CH0 Homing Mode Running	0	BIT	0.1	41.3	Input	0	
CH0 Position Mode Running	0	BIT	0.1	41.4	Input	0	
CH0 Velocity Mode Running	0	BIT	0.1	41.5	Input	0	
CH0 Homed	1	BIT	0.1	41.6	Input	0	
CH0 Location Arrival	0	BIT	0.1	41.7	Input	0	
CH0 Velocity Arrival	0	BIT	0.1	42.0	Input	0	
CH0 Positive Limit Signal	0	BIT	0.1	42.1	Input	0	
CH0 Negative Limit Signal	0	BIT	0.1	42.2	Input	0	
CH0 Home Signal	0	BIT	0.1	42.3	Input	0	
CH0 Brake Signal	0	BIT	0.1	42.4	Input	0	
CH1 Pulse Output Direction	0	BIT	0.1	43.0	Input	0	
CH1 Pulse Status Flag 1	0	BIT	0.1	43.1	Input	0	
CH1 Pulse Status Flag 2	0	BIT	0.1	43.2	Input	0	
CH1 Homing Mode Running	0	BIT	0.1	43.3	Input	0	
CH1 Position Mode Running	0	BIT	0.1	43.4	Input	0	
CH1 Velocity Mode Running	0	BIT	0.1	43.5	Input	0	
CH1 Homed	0	BIT	0.1	43.6	Input	0	
CH1 Location Arrival	0	BIT	0.1	43.7	Input	0	
CH1 Velocity Arrival	0	BIT	0.1	44.0	Input	0	
CH1 Positive Limit Signal	0	BIT	0.1	44.1	Input	0	
CH1 Negative Limit Signal	0	BIT	0.1	44.2	Input	0	
CH1 Home Signal	0	BIT	0.1	44.3	Input	0	
CH1 Brake Signal	0	BIT	0.1	44.4	Input	0	
CH2 Pulse Output Direction	0	BIT	0.1	45.0	Input	0	
CH2 Pulse Status Flag 1	0	BIT	0.1	45.1	Input	0	
CH2 Pulse Status Flag 2	0	BIT	0.1	45.2	Input	0	
CH2 Homing Mode Running	0	BIT	0.1	45.3	Input	0	
CH2 Position Mode Running	0	BIT	0.1	45.4	Input	0	
CH2 Velocity Mode Running	0	BIT	0.1	45.5	Input	0	
CH2 Homed	0	BIT	0.1	45.6	Input	0	
CH2 Location Arrival	0	BIT	0.1	45.7	Input	0	
CH2 Velocity Arrival	0	BIT	0.1	46.0	Input	0	
CH2 Positive Limit Signal	0	BIT	0.1	46.1	Input	0	
CH2 Negative Limit Signal	0	BIT	0.1	46.2	Input	0	
CH2 Home Signal	0	BIT	0.1	46.3	Input	0	
CH2 Brake Signal	0	BIT	0.1	46.4	Input	0	
CH3 Pulse Output Direction	0	BIT	0.1	47.0	Input	0	
CH3 Pulse Status Flag 1	0	BIT	0.1	47.1	Input	0	
CH3 Pulse Status Flag 2	0	BIT	0.1	47.2	Input	0	
CH3 Homing Mode Running	0	BIT	0.1	47.3	Input	0	
CH3 Position Mode Running	0	BIT	0.1	47.4	Input	0	
CH3 Velocity Mode Running	0	BIT	0.1	47.5	Input	0	
CH3 Homed	0	BIT	0.1	47.6	Input	0	
CH3 Location Arrival	0	BIT	0.1	47.7	Input	0	
CH3 Velocity Arrival	0	BIT	0.1	48.0	Input	0	
CH3 Positive Limit Signal	0	BIT	0.1	48.1	Input	0	
CH3 Negative Limit Signal	0	BIT	0.1	48.2	Input	0	
CH3 Home Signal	0	BIT	0.1	48.3	Input	0	
CH3 Brake Signal	0	BIT	0.1	48.4	Input	0	
CH0 Error Code	0	UINT	2.0	49.0	Input	0	
CH1 Error Code	1537	UINT	2.0	51.0	Input	0	
CH2 Error Code	1537	UINT	2.0	53.0	Input	0	
CH3 Error Code	1537	UINT	2.0	55.0	Input	0	
CH0 Current Location	0	DINT	4.0	57.0	Input	0	
CH0 Current Velocity	0	DINT	4.0	61.0	Input	0	
CH1 Current Location	0	DINT	4.0	65.0	Input	0	
CH1 Current Velocity	0	DINT	4.0	69.0	Input	0	
CH2 Current Location	0	DINT	4.0	73.0	Input	0	

- **Channel 0 turns on speed mode, running at 100000Hz, and the speed is changed to 10000Hz during operation**

a. Configure the configuration parameters, such as enabling the single mode in the motion merge mode selection, as shown in the figure below.

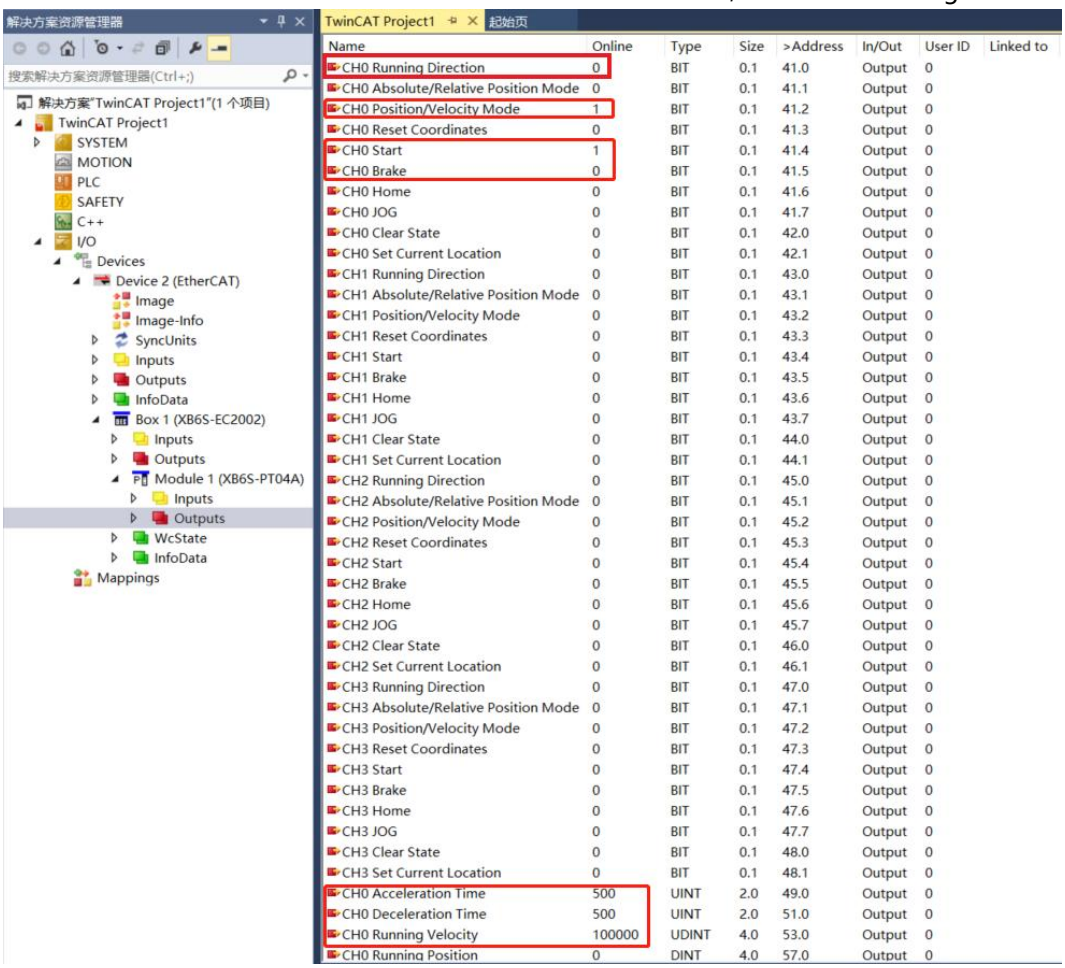


b. Set channel 0 to speed mode;

c. Configure channel 0 to run at a speed of 100000Hz, the direction of motion to 0 forward, and the acceleration and deceleration times to 500;

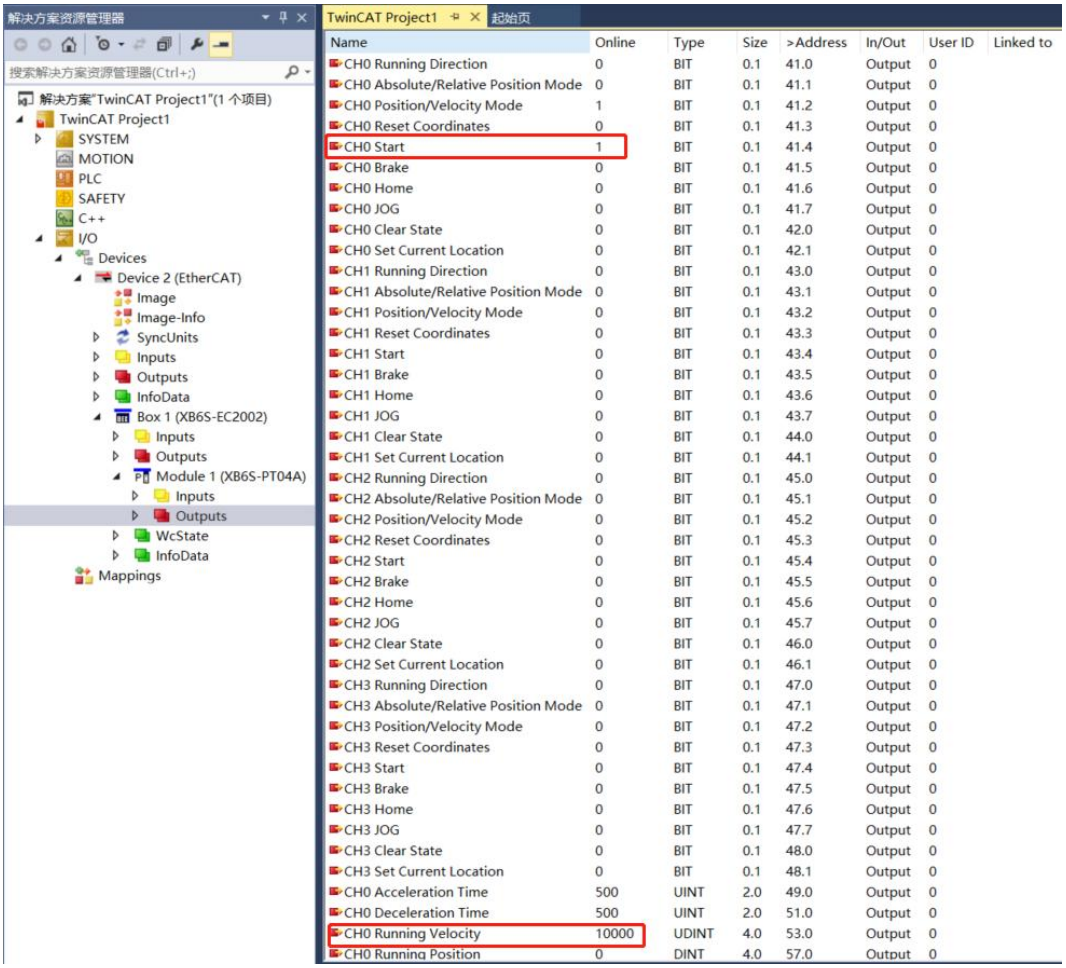
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.



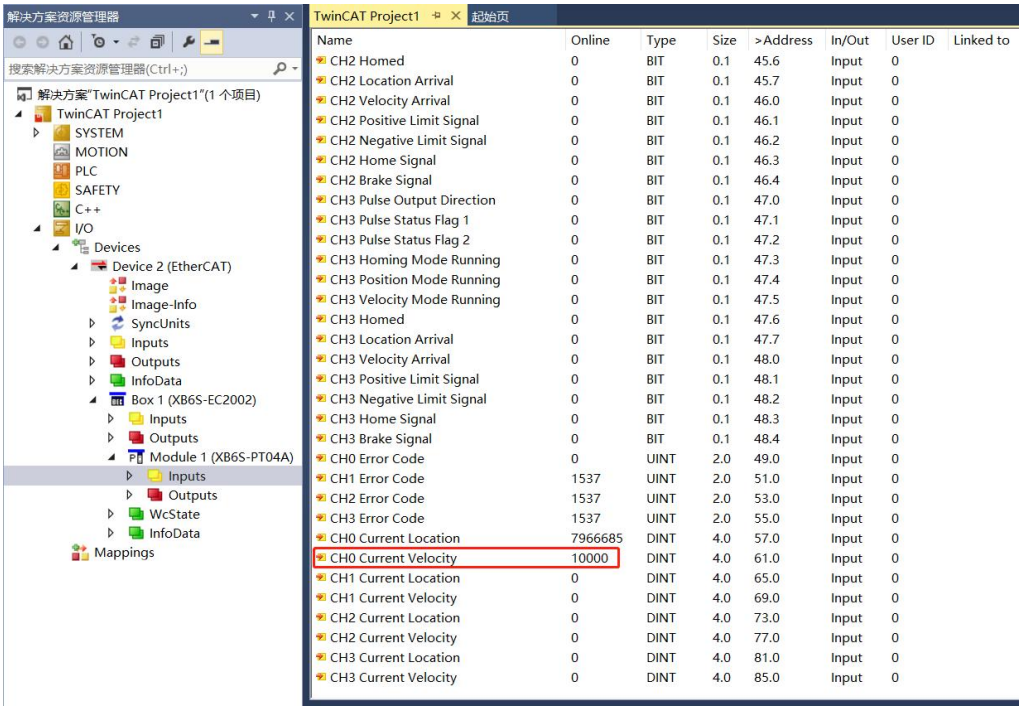
f. During the movement, change the running speed of channel 0 to 10000Hz;

g. Reset the start command of channel 0 from 0 to 1 to start motion merging, as shown in the figure below.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH0 Running Direction	0	BIT	0.1	41.0	Output	0	
CH0 Absolute/Relative Position Mode	0	BIT	0.1	41.1	Output	0	
CH0 Position/Velocity Mode	1	BIT	0.1	41.2	Output	0	
CH0 Reset Coordinates	0	BIT	0.1	41.3	Output	0	
CH0 Start	1	BIT	0.1	41.4	Output	0	
CH0 Brake	0	BIT	0.1	41.5	Output	0	
CH0 Home	0	BIT	0.1	41.6	Output	0	
CH0 JOG	0	BIT	0.1	41.7	Output	0	
CH0 Clear State	0	BIT	0.1	42.0	Output	0	
CH0 Set Current Location	0	BIT	0.1	42.1	Output	0	
CH1 Running Direction	0	BIT	0.1	43.0	Output	0	
CH1 Absolute/Relative Position Mode	0	BIT	0.1	43.1	Output	0	
CH1 Position/Velocity Mode	0	BIT	0.1	43.2	Output	0	
CH1 Reset Coordinates	0	BIT	0.1	43.3	Output	0	
CH1 Start	0	BIT	0.1	43.4	Output	0	
CH1 Brake	0	BIT	0.1	43.5	Output	0	
CH1 Home	0	BIT	0.1	43.6	Output	0	
CH1 JOG	0	BIT	0.1	43.7	Output	0	
CH1 Clear State	0	BIT	0.1	44.0	Output	0	
CH1 Set Current Location	0	BIT	0.1	44.1	Output	0	
CH2 Running Direction	0	BIT	0.1	45.0	Output	0	
CH2 Absolute/Relative Position Mode	0	BIT	0.1	45.1	Output	0	
CH2 Position/Velocity Mode	0	BIT	0.1	45.2	Output	0	
CH2 Reset Coordinates	0	BIT	0.1	45.3	Output	0	
CH2 Start	0	BIT	0.1	45.4	Output	0	
CH2 Brake	0	BIT	0.1	45.5	Output	0	
CH2 Home	0	BIT	0.1	45.6	Output	0	
CH2 JOG	0	BIT	0.1	45.7	Output	0	
CH2 Clear State	0	BIT	0.1	46.0	Output	0	
CH2 Set Current Location	0	BIT	0.1	46.1	Output	0	
CH3 Running Direction	0	BIT	0.1	47.0	Output	0	
CH3 Absolute/Relative Position Mode	0	BIT	0.1	47.1	Output	0	
CH3 Position/Velocity Mode	0	BIT	0.1	47.2	Output	0	
CH3 Reset Coordinates	0	BIT	0.1	47.3	Output	0	
CH3 Start	0	BIT	0.1	47.4	Output	0	
CH3 Brake	0	BIT	0.1	47.5	Output	0	
CH3 Home	0	BIT	0.1	47.6	Output	0	
CH3 JOG	0	BIT	0.1	47.7	Output	0	
CH3 Clear State	0	BIT	0.1	48.0	Output	0	
CH3 Set Current Location	0	BIT	0.1	48.1	Output	0	
CH0 Acceleration Time	500	UINT	2.0	49.0	Output	0	
CH0 Deceleration Time	500	UINT	2.0	51.0	Output	0	
CH0 Running Velocity	10000	UDINT	4.0	53.0	Output	0	
CH0 Running Position	0	DINT	4.0	57.0	Output	0	

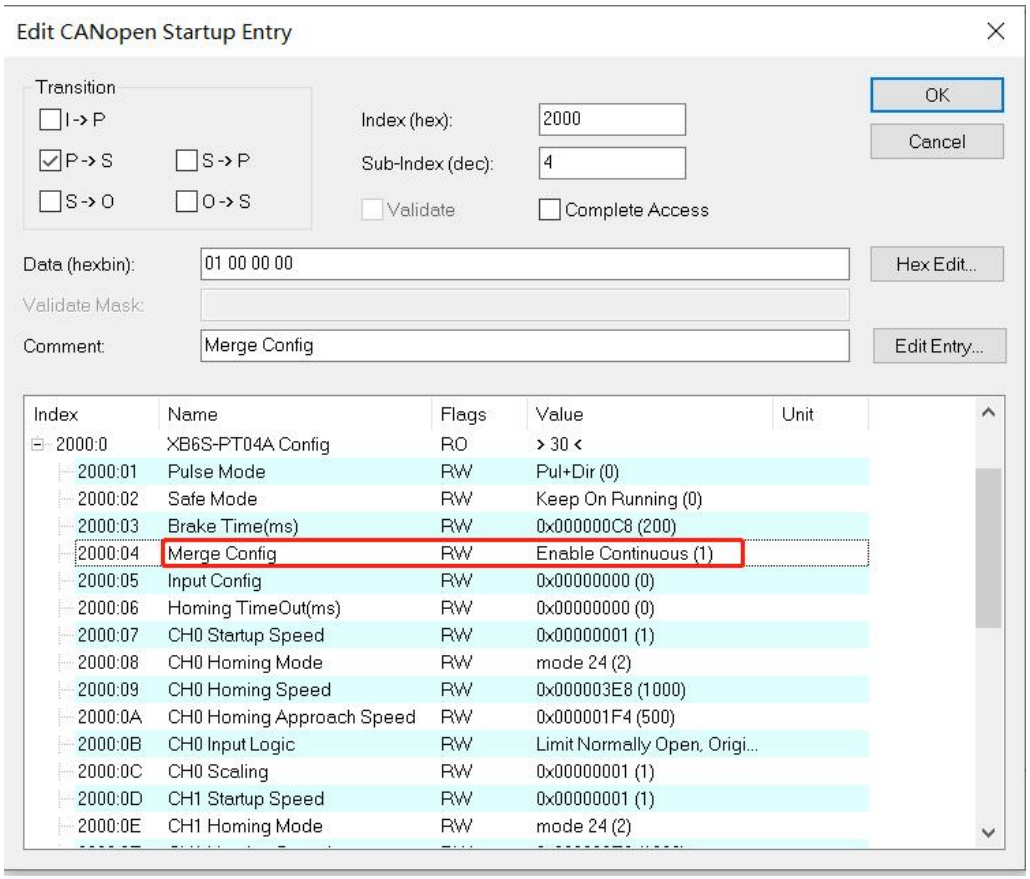
h. You can see that channel 0 slows down to 10000Hz motion, as shown in the figure below.



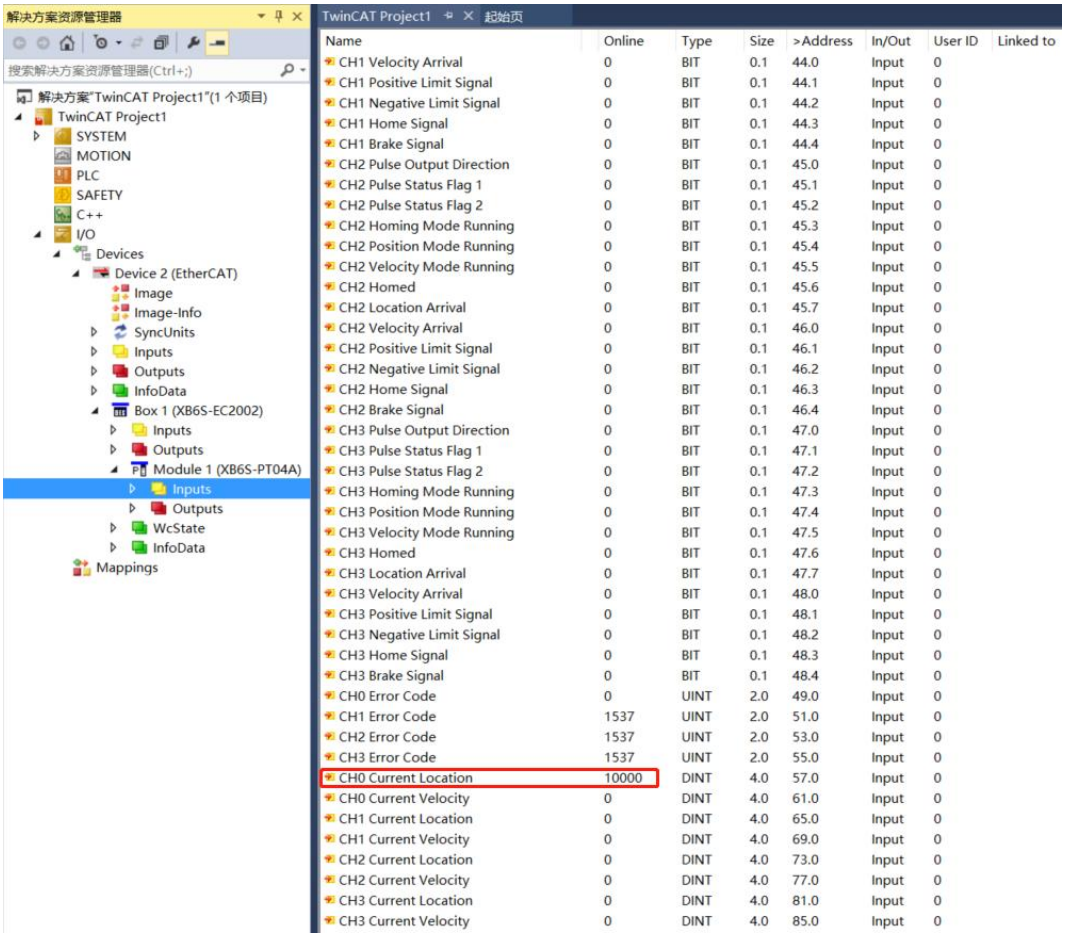
Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH2 Homed	0	BIT	0.1	45.6	Input	0	
CH2 Location Arrival	0	BIT	0.1	45.7	Input	0	
CH2 Velocity Arrival	0	BIT	0.1	46.0	Input	0	
CH2 Positive Limit Signal	0	BIT	0.1	46.1	Input	0	
CH2 Negative Limit Signal	0	BIT	0.1	46.2	Input	0	
CH2 Home Signal	0	BIT	0.1	46.3	Input	0	
CH2 Brake Signal	0	BIT	0.1	46.4	Input	0	
CH3 Pulse Output Direction	0	BIT	0.1	47.0	Input	0	
CH3 Pulse Status Flag 1	0	BIT	0.1	47.1	Input	0	
CH3 Pulse Status Flag 2	0	BIT	0.1	47.2	Input	0	
CH3 Homing Mode Running	0	BIT	0.1	47.3	Input	0	
CH3 Position Mode Running	0	BIT	0.1	47.4	Input	0	
CH3 Velocity Mode Running	0	BIT	0.1	47.5	Input	0	
CH3 Homed	0	BIT	0.1	47.6	Input	0	
CH3 Location Arrival	0	BIT	0.1	47.7	Input	0	
CH3 Velocity Arrival	0	BIT	0.1	48.0	Input	0	
CH3 Positive Limit Signal	0	BIT	0.1	48.1	Input	0	
CH3 Negative Limit Signal	0	BIT	0.1	48.2	Input	0	
CH3 Home Signal	0	BIT	0.1	48.3	Input	0	
CH3 Brake Signal	0	BIT	0.1	48.4	Input	0	
CH0 Error Code	0	UINT	2.0	49.0	Input	0	
CH1 Error Code	1537	UINT	2.0	51.0	Input	0	
CH2 Error Code	1537	UINT	2.0	53.0	Input	0	
CH3 Error Code	1537	UINT	2.0	55.0	Input	0	
CH0 Current Location	7966685	DINT	4.0	57.0	Input	0	
CH0 Current Velocity	10000	DINT	4.0	61.0	Input	0	
CH1 Current Location	0	DINT	4.0	65.0	Input	0	
CH1 Current Velocity	0	DINT	4.0	69.0	Input	0	
CH2 Current Location	0	DINT	4.0	73.0	Input	0	
CH2 Current Velocity	0	DINT	4.0	77.0	Input	0	
CH3 Current Location	0	DINT	4.0	81.0	Input	0	
CH3 Current Velocity	0	DINT	4.0	85.0	Input	0	

◆ **The current position of channel 0 is 10000, and it moves to the position of 20000. During the movement, the position is changed to 50000.**

a. Configure the configuration parameters, such as the motion merge mode selection to enable the continuous mode, as shown in the figure below.



b. The current position of channel 0 is 10000, as shown in the figure below.



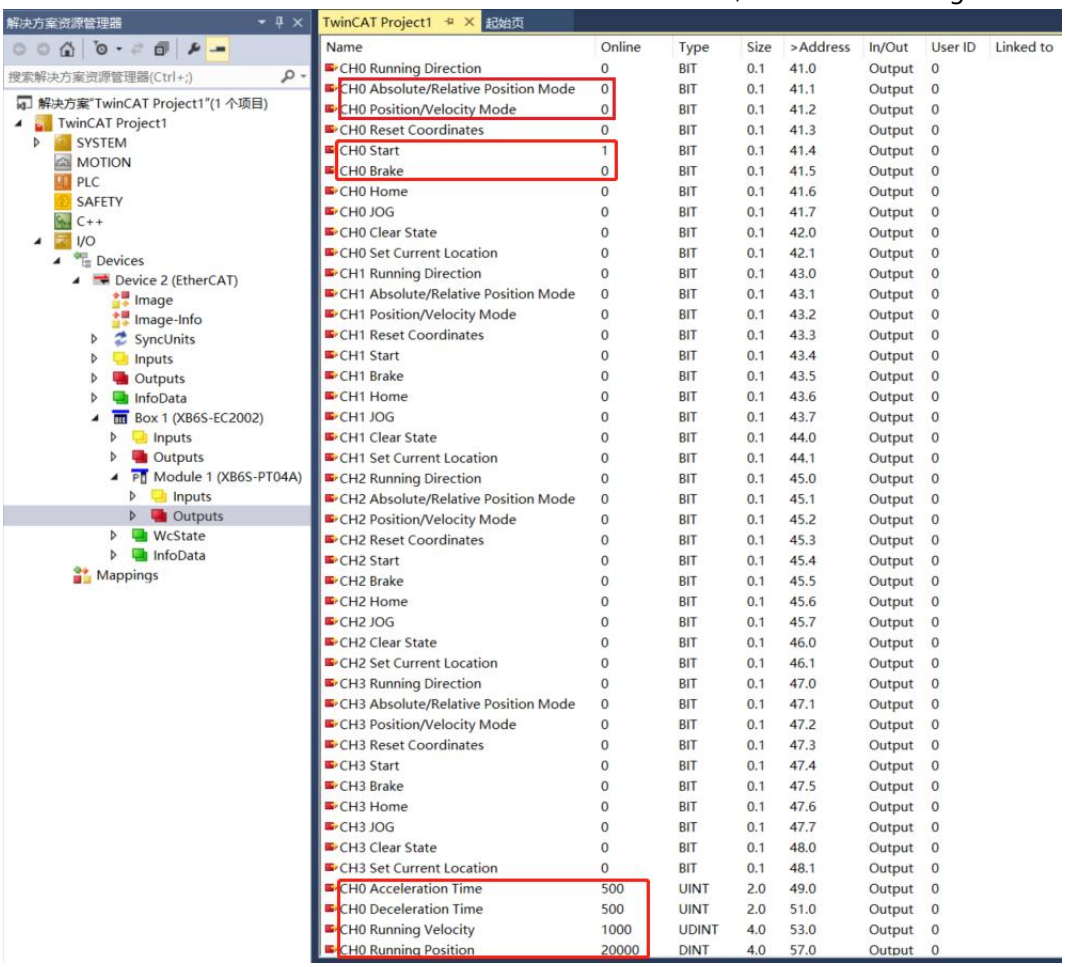
Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH1 Velocity Arrival	0	BIT	0.1	44.0	Input	0	
CH1 Positive Limit Signal	0	BIT	0.1	44.1	Input	0	
CH1 Negative Limit Signal	0	BIT	0.1	44.2	Input	0	
CH1 Home Signal	0	BIT	0.1	44.3	Input	0	
CH1 Brake Signal	0	BIT	0.1	44.4	Input	0	
CH2 Pulse Output Direction	0	BIT	0.1	45.0	Input	0	
CH2 Pulse Status Flag 1	0	BIT	0.1	45.1	Input	0	
CH2 Pulse Status Flag 2	0	BIT	0.1	45.2	Input	0	
CH2 Homing Mode Running	0	BIT	0.1	45.3	Input	0	
CH2 Position Mode Running	0	BIT	0.1	45.4	Input	0	
CH2 Velocity Mode Running	0	BIT	0.1	45.5	Input	0	
CH2 Homed	0	BIT	0.1	45.6	Input	0	
CH2 Location Arrival	0	BIT	0.1	45.7	Input	0	
CH2 Velocity Arrival	0	BIT	0.1	46.0	Input	0	
CH2 Positive Limit Signal	0	BIT	0.1	46.1	Input	0	
CH2 Negative Limit Signal	0	BIT	0.1	46.2	Input	0	
CH2 Home Signal	0	BIT	0.1	46.3	Input	0	
CH2 Brake Signal	0	BIT	0.1	46.4	Input	0	
CH3 Pulse Output Direction	0	BIT	0.1	47.0	Input	0	
CH3 Pulse Status Flag 1	0	BIT	0.1	47.1	Input	0	
CH3 Pulse Status Flag 2	0	BIT	0.1	47.2	Input	0	
CH3 Homing Mode Running	0	BIT	0.1	47.3	Input	0	
CH3 Position Mode Running	0	BIT	0.1	47.4	Input	0	
CH3 Velocity Mode Running	0	BIT	0.1	47.5	Input	0	
CH3 Homed	0	BIT	0.1	47.6	Input	0	
CH3 Location Arrival	0	BIT	0.1	47.7	Input	0	
CH3 Velocity Arrival	0	BIT	0.1	48.0	Input	0	
CH3 Positive Limit Signal	0	BIT	0.1	48.1	Input	0	
CH3 Negative Limit Signal	0	BIT	0.1	48.2	Input	0	
CH3 Home Signal	0	BIT	0.1	48.3	Input	0	
CH3 Brake Signal	0	BIT	0.1	48.4	Input	0	
CH0 Error Code	0	UINT	2.0	49.0	Input	0	
CH1 Error Code	1537	UINT	2.0	51.0	Input	0	
CH2 Error Code	1537	UINT	2.0	53.0	Input	0	
CH3 Error Code	1537	UINT	2.0	55.0	Input	0	
CH0 Current Location	10000	DINT	4.0	57.0	Input	0	
CH0 Current Velocity	0	DINT	4.0	61.0	Input	0	
CH1 Current Location	0	DINT	4.0	65.0	Input	0	
CH1 Current Velocity	0	DINT	4.0	69.0	Input	0	
CH2 Current Location	0	DINT	4.0	73.0	Input	0	
CH2 Current Velocity	0	DINT	4.0	77.0	Input	0	
CH3 Current Location	0	DINT	4.0	81.0	Input	0	
CH3 Current Velocity	0	DINT	4.0	85.0	Input	0	

c. Set channel 0 to absolute position mode;

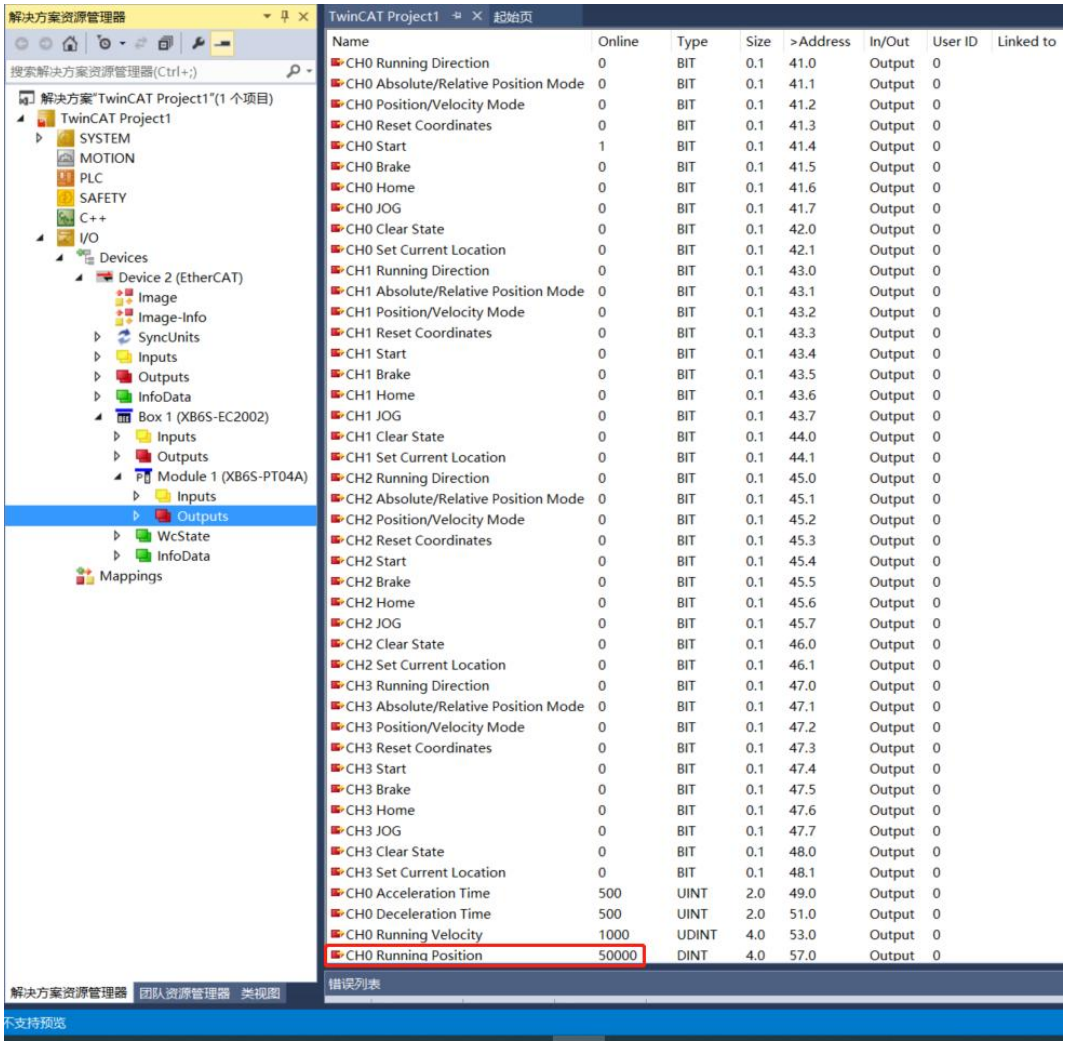
d. Configure channel 0 to run at 20000 steps, 1000 Hz speed, and 500 acceleration and deceleration times;

e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

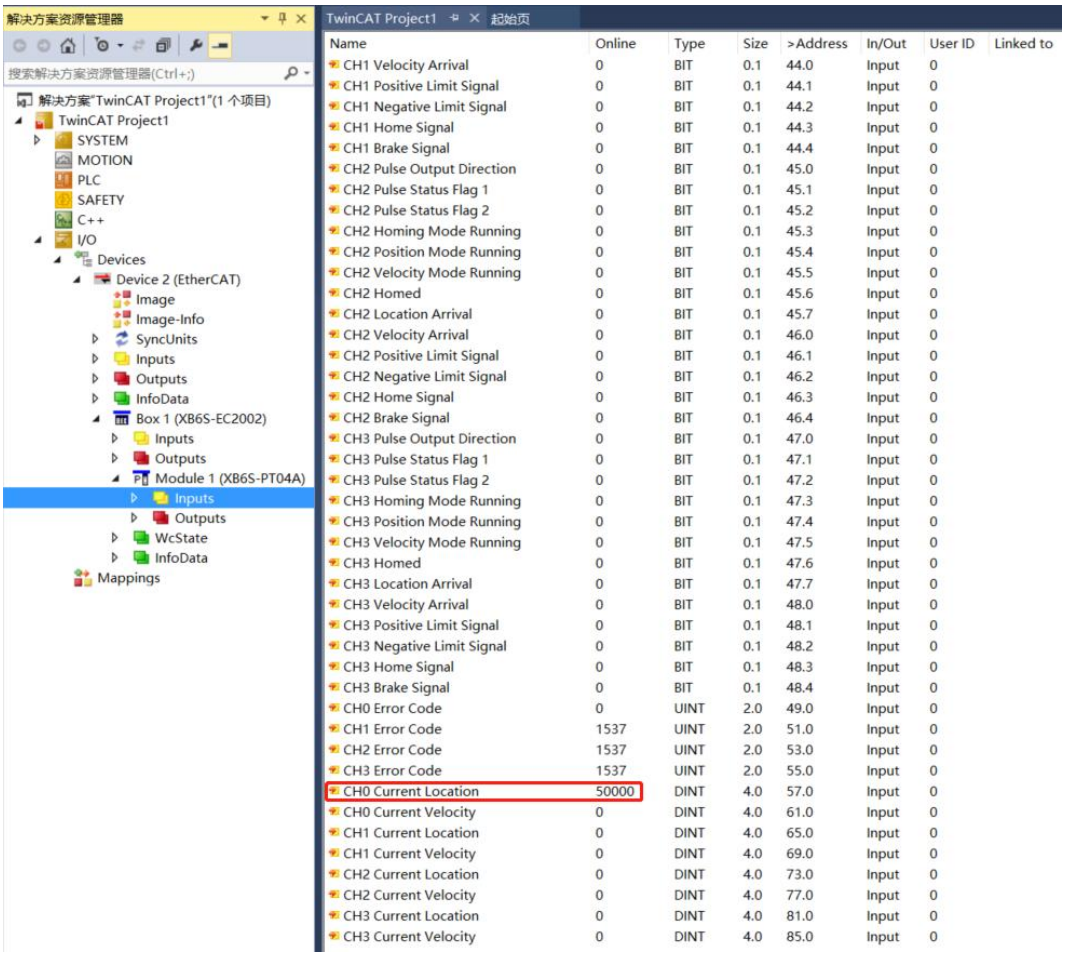
f. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.



g. During the motion process, change the running step number of channel 0 to 50000 and start motion merging, as shown in the figure below.



h. After the movement is completed, you can see that the current coordinate of channel 0 is 50000, as shown in the figure below.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
CH1 Velocity Arrival	0	BIT	0.1	44.0	Input	0	
CH1 Positive Limit Signal	0	BIT	0.1	44.1	Input	0	
CH1 Negative Limit Signal	0	BIT	0.1	44.2	Input	0	
CH1 Home Signal	0	BIT	0.1	44.3	Input	0	
CH1 Brake Signal	0	BIT	0.1	44.4	Input	0	
CH2 Pulse Output Direction	0	BIT	0.1	45.0	Input	0	
CH2 Pulse Status Flag 1	0	BIT	0.1	45.1	Input	0	
CH2 Pulse Status Flag 2	0	BIT	0.1	45.2	Input	0	
CH2 Homing Mode Running	0	BIT	0.1	45.3	Input	0	
CH2 Position Mode Running	0	BIT	0.1	45.4	Input	0	
CH2 Velocity Mode Running	0	BIT	0.1	45.5	Input	0	
CH2 Homed	0	BIT	0.1	45.6	Input	0	
CH2 Location Arrival	0	BIT	0.1	45.7	Input	0	
CH2 Velocity Arrival	0	BIT	0.1	46.0	Input	0	
CH2 Positive Limit Signal	0	BIT	0.1	46.1	Input	0	
CH2 Negative Limit Signal	0	BIT	0.1	46.2	Input	0	
CH2 Home Signal	0	BIT	0.1	46.3	Input	0	
CH2 Brake Signal	0	BIT	0.1	46.4	Input	0	
CH3 Pulse Output Direction	0	BIT	0.1	47.0	Input	0	
CH3 Pulse Status Flag 1	0	BIT	0.1	47.1	Input	0	
CH3 Pulse Status Flag 2	0	BIT	0.1	47.2	Input	0	
CH3 Homing Mode Running	0	BIT	0.1	47.3	Input	0	
CH3 Position Mode Running	0	BIT	0.1	47.4	Input	0	
CH3 Velocity Mode Running	0	BIT	0.1	47.5	Input	0	
CH3 Homed	0	BIT	0.1	47.6	Input	0	
CH3 Location Arrival	0	BIT	0.1	47.7	Input	0	
CH3 Velocity Arrival	0	BIT	0.1	48.0	Input	0	
CH3 Positive Limit Signal	0	BIT	0.1	48.1	Input	0	
CH3 Negative Limit Signal	0	BIT	0.1	48.2	Input	0	
CH3 Home Signal	0	BIT	0.1	48.3	Input	0	
CH3 Brake Signal	0	BIT	0.1	48.4	Input	0	
CH0 Error Code	0	UINT	2.0	49.0	Input	0	
CH1 Error Code	1537	UINT	2.0	51.0	Input	0	
CH2 Error Code	1537	UINT	2.0	53.0	Input	0	
CH3 Error Code	1537	UINT	2.0	55.0	Input	0	
CH0 Current Location	50000	DINT	4.0	57.0	Input	0	
CH0 Current Velocity	0	DINT	4.0	61.0	Input	0	
CH1 Current Location	0	DINT	4.0	65.0	Input	0	
CH1 Current Velocity	0	DINT	4.0	69.0	Input	0	
CH2 Current Location	0	DINT	4.0	73.0	Input	0	
CH2 Current Velocity	0	DINT	4.0	77.0	Input	0	
CH3 Current Location	0	DINT	4.0	81.0	Input	0	
CH3 Current Velocity	0	DINT	4.0	85.0	Input	0	

7.4.2 Application in Sysmac Studio software environment

1、Preparation

- **Hardware Environment**
  - **Module model XB6S-PT04A**
  - **EtherCAT bus coupler module, end cap**

  This description takes the XB6S-EC2002 coupler module as an example
  - **A computer with Sysmac Studio software pre-installed**
  - **An Omron PLC. This description takes the model NX1P2-9024DT as an example.**
  - **EtherCAT dedicated shielded cable**
  - **Motor drivers, stepper/servo motors and other equipment**
  - **Switching power supply**
  - **Module mounting rails and rail fixings**
  - **Device Profile**

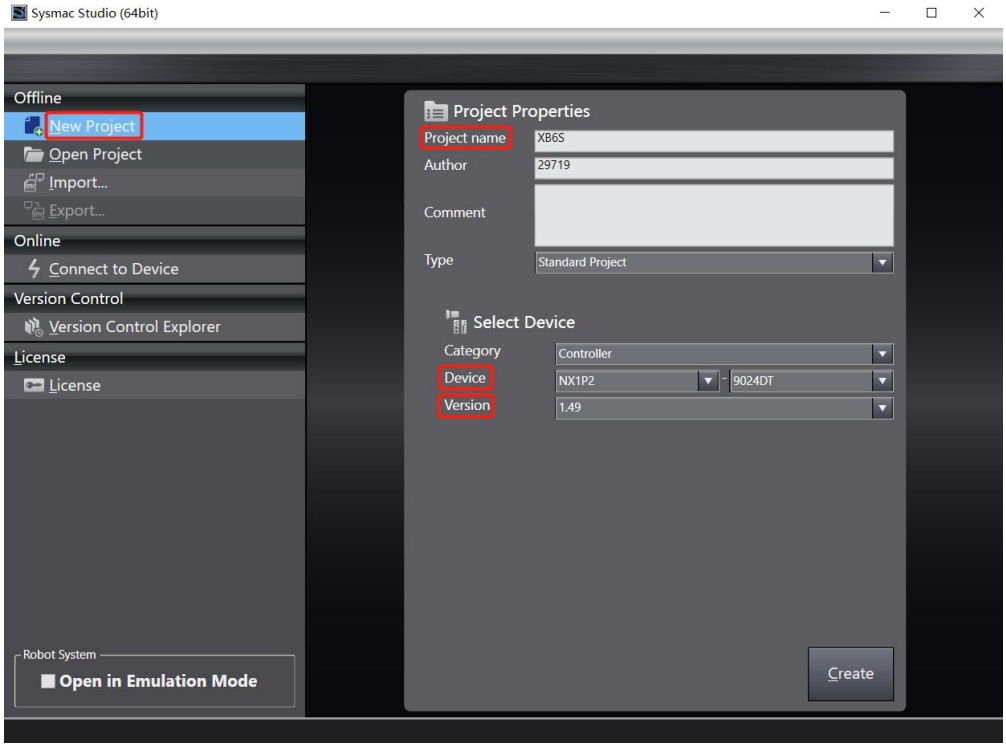
    Configuration file acquisition address:https://www.solidotech.com/cn/resources/configuration-files
- **Hardware configuration and wiring**

  Please follow the "5 Installation and removal"and"6 Wiring"
- **Computer IP requirements**

  Set the IP address of the computer and the IP address of the PLC, and ensure that they are in the same network segment.

2、New Construction

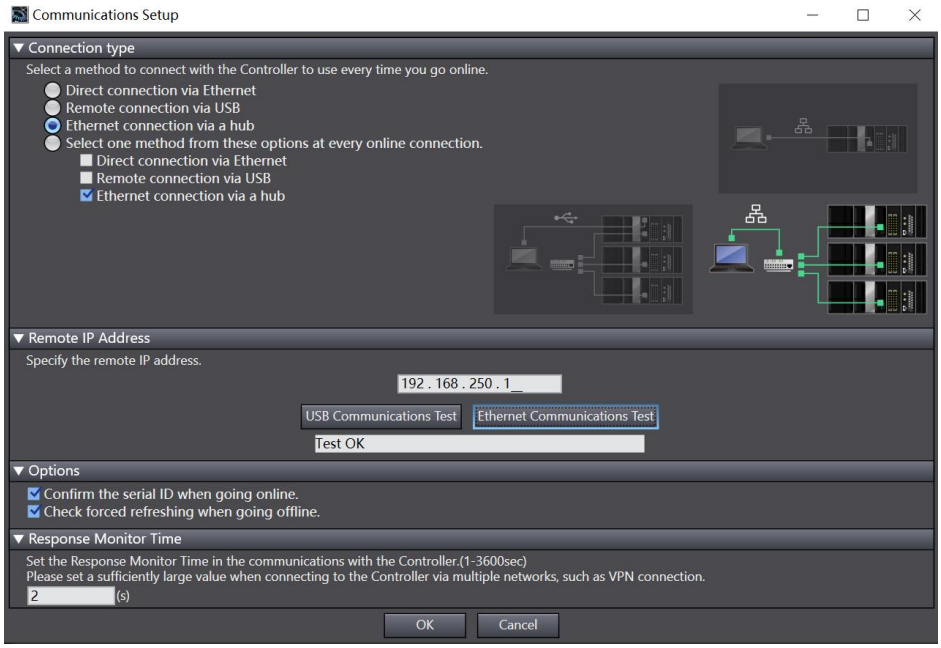
a. Open Sysmac Studio and click “New Project”.



- Project name: Customization.
- Select the device: Select the corresponding PLC model in "Device" and the corresponding version number of the PLC in "Version".

b. After entering the project properties, click Create.

c. Click "Controller -> Communications Setup" in the menu bar, select the method to be used each time you connect to the controller while online, and enter the "Remote IP Address", as shown in the figure below.

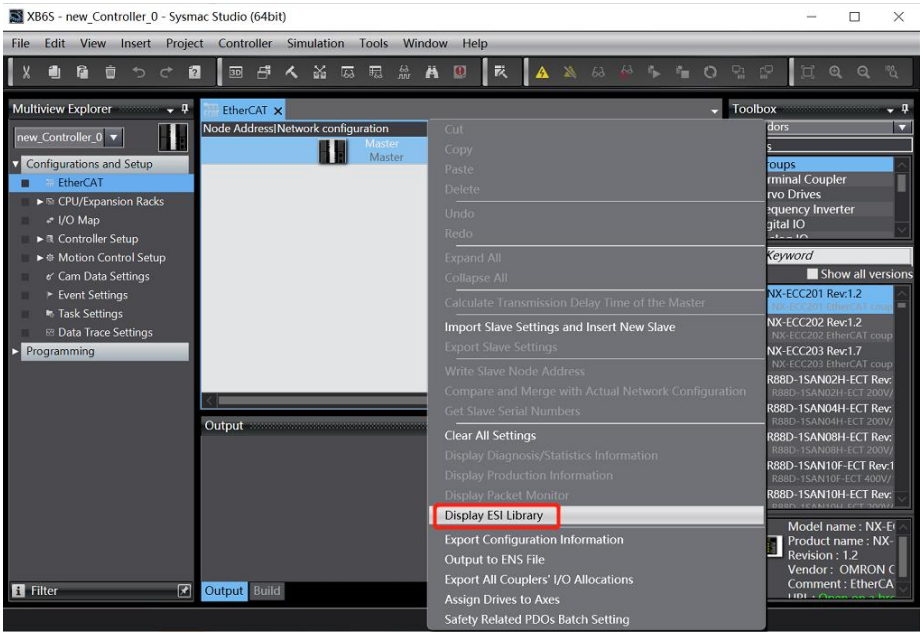


d. Click Ethernet Communication Test. The system displays that the test is successful.

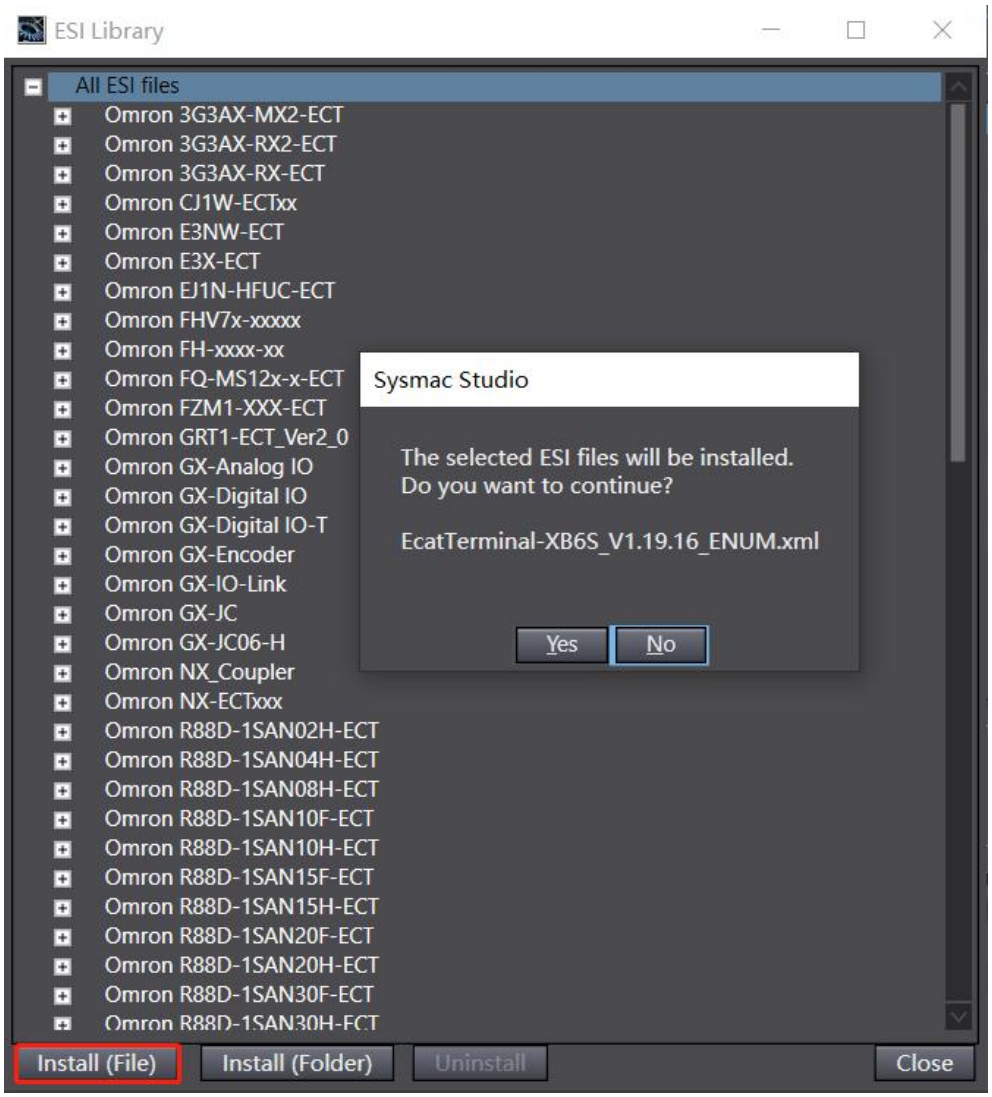
3、Installation XML File

a. In the left navigation tree, expand Configurations and Setup and double-click EtherCAT.

b. Right-click "Master" and select "Display ESI Library", as shown in the following figure.



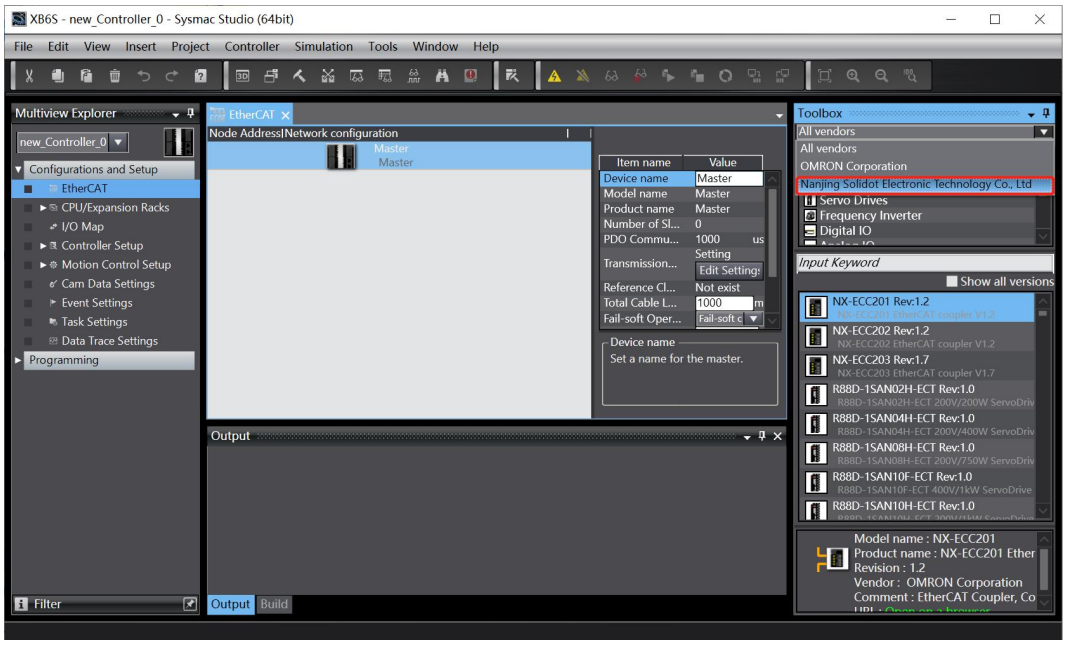
c. In the pop-up "ESI Library" window, click "Install (File)", select the XML file path of the module, and click "Yes" to complete the installation, as shown in the following figure.



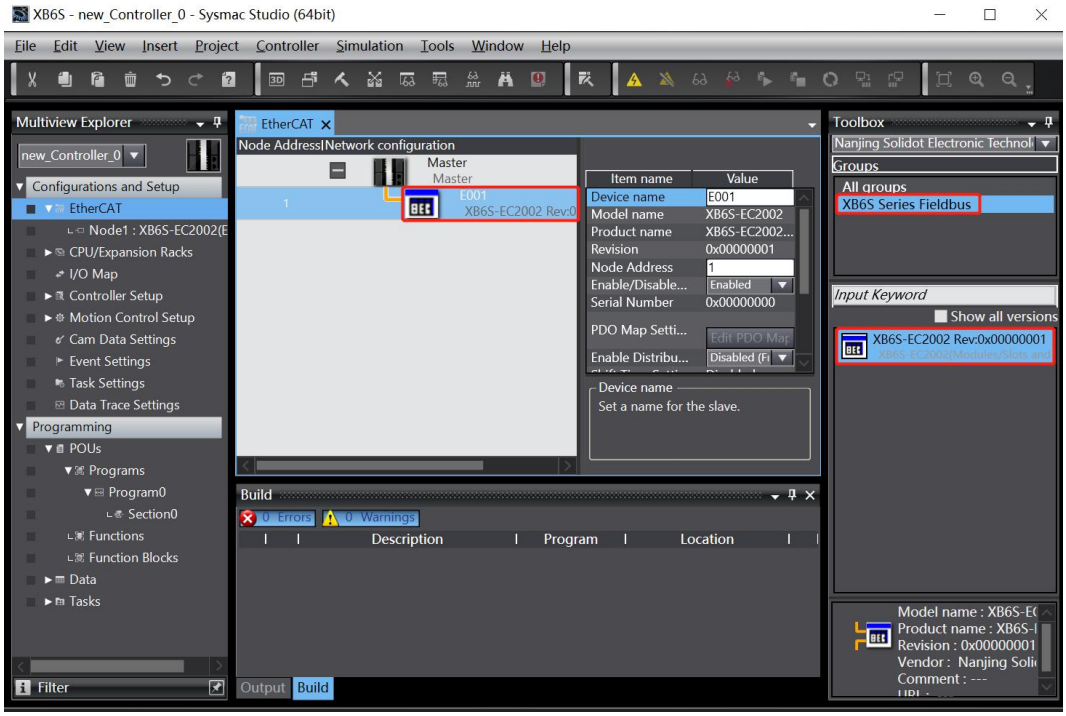
4、Add a device

There are two ways to add devices: online scanning and offline adding. This description takes offline adding as an example.

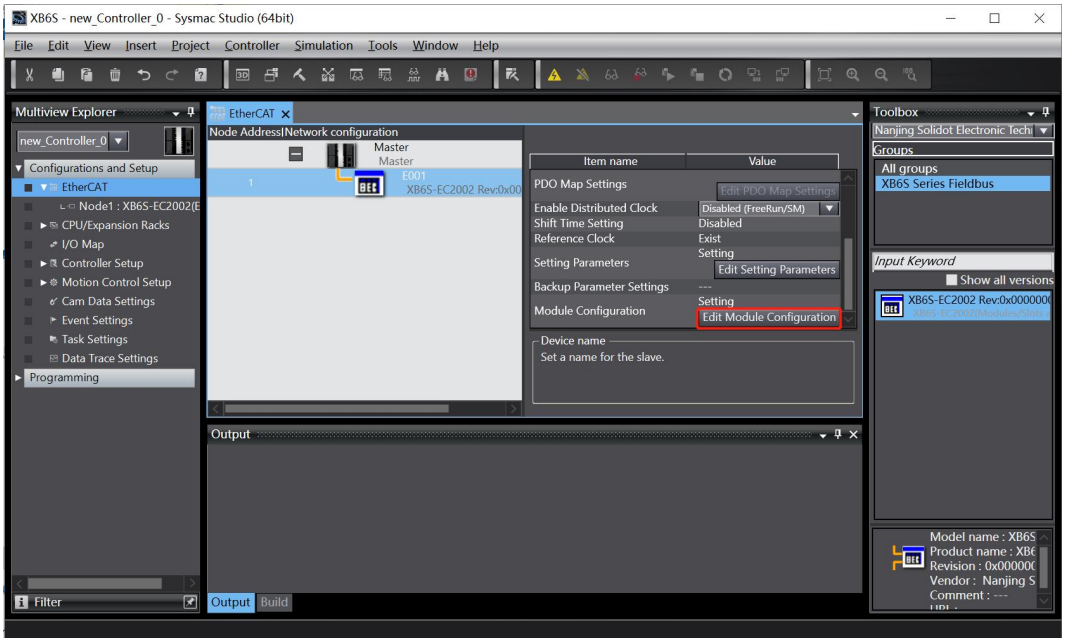
a. Under the "Toolbox" column on the right, click to expand all suppliers and select "Nanjing Solidot Electronic Technology Co., Ltd.", as shown in the figure below.



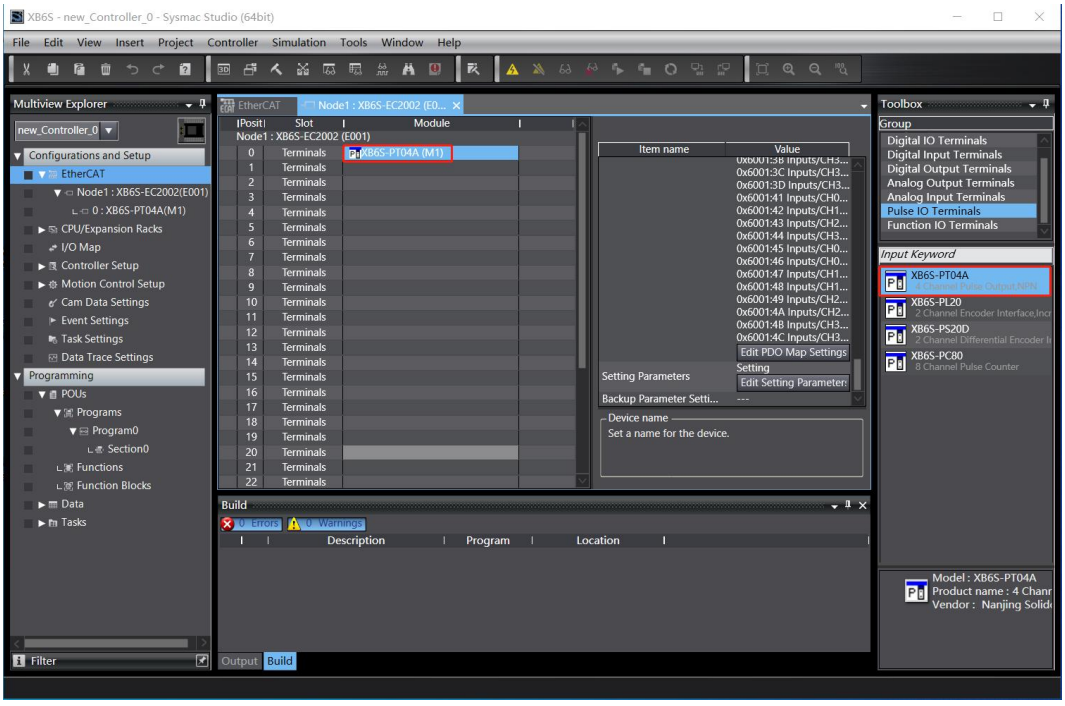
b. Click to select XB6S Series Fieldbus, double-click the XB6S-EC2002 coupler module, and add a slave device, as shown in the following figure.



c. On the EtherCAT main page, select the XB6S-EC2002 coupler module that you just added and select “Edit Module Configuration”, as shown in the figure below.

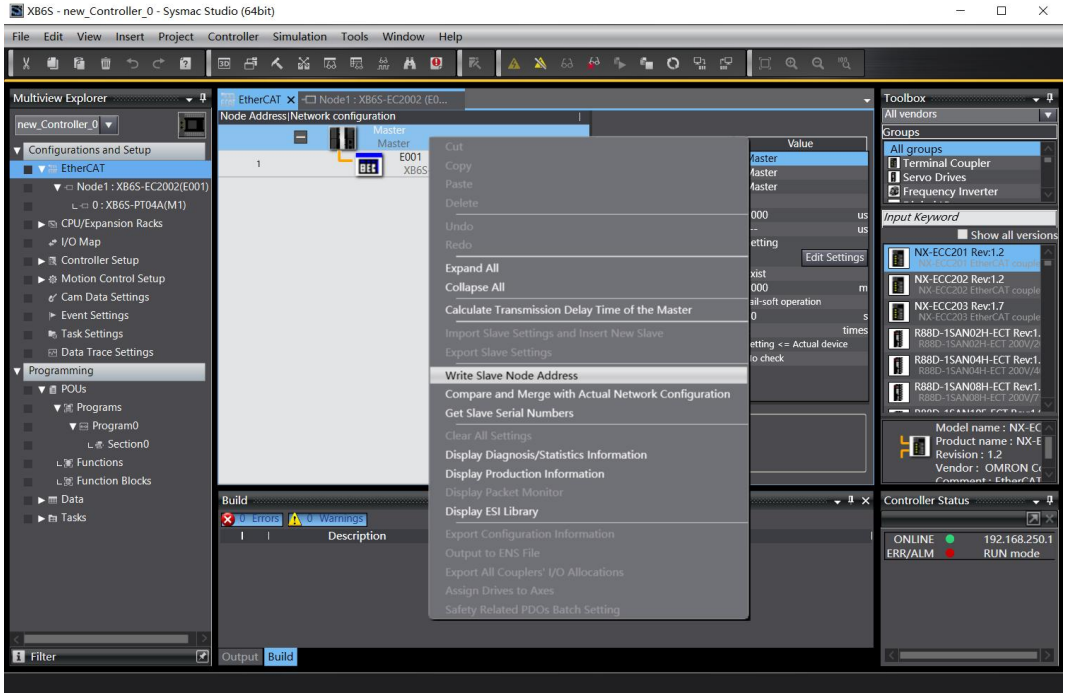


d. Position the cursor in "Module", click the module in the toolbox module list on the right, and add I/O modules one by one according to the order of I/O module configuration. Note: The order and model must be consistent with the physical topology!

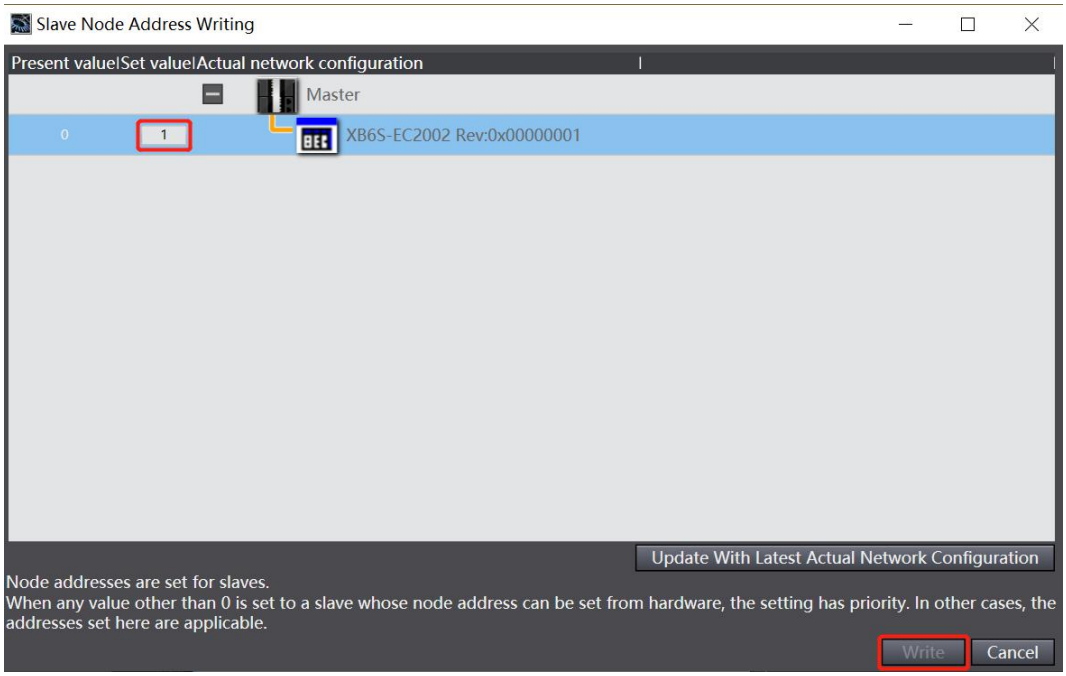


5、Set the node address

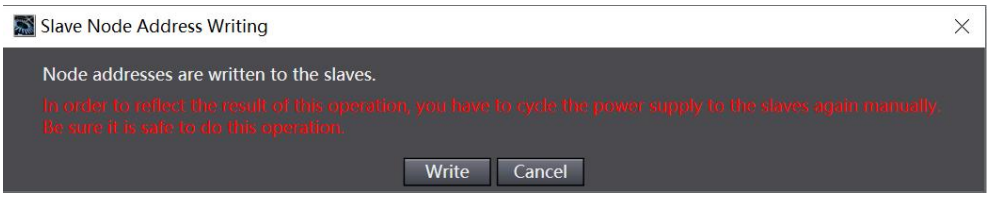
a. Click "Controller->Online" in the menu bar to switch the controller to online status. Right-click the master device and click "Write Slave Node Address", as shown in the figure below.

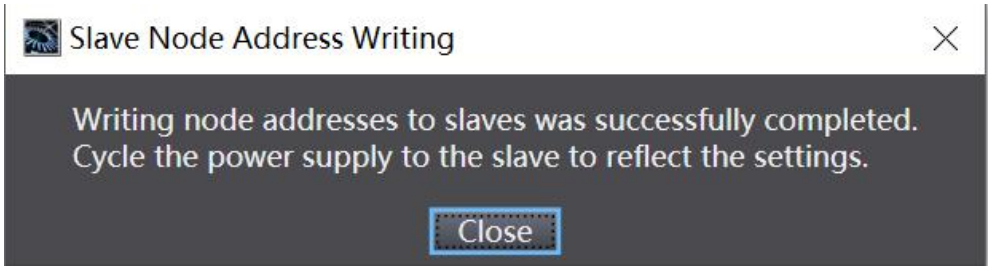


b. In the window for setting the node address, click the value under Setting Value, enter the node address, and click "Write" to change the node address of the slave device, as shown in the following figure.



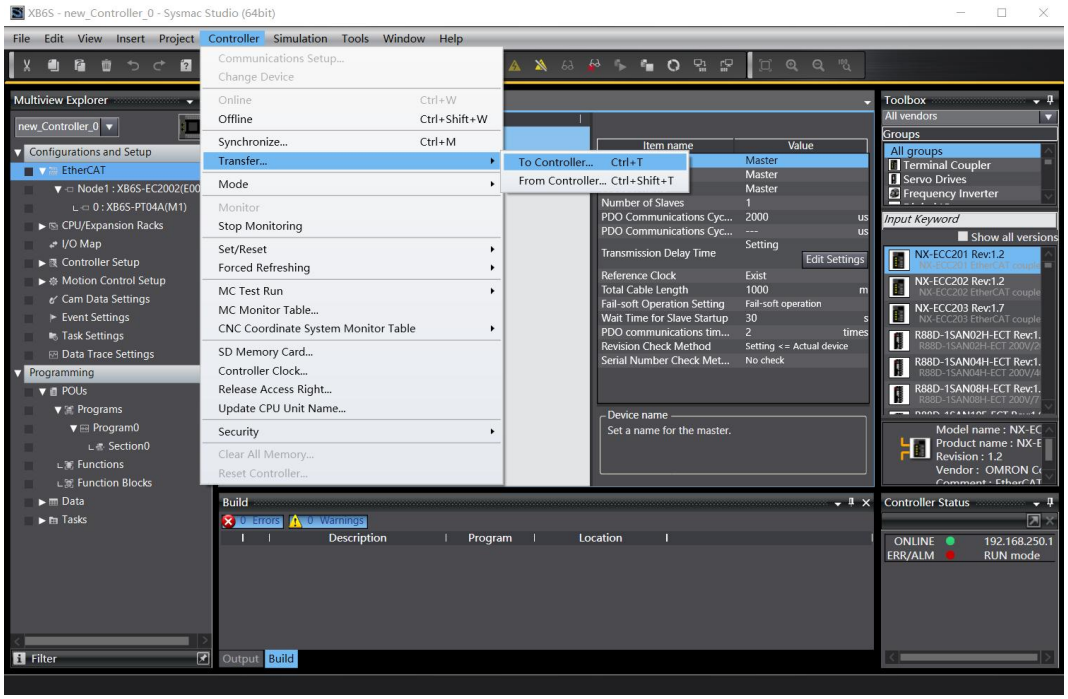
c. After writing, a power-on prompt pops up, as shown in the figure below. Click "Write" and then restart the power of the slave device according to the prompt.



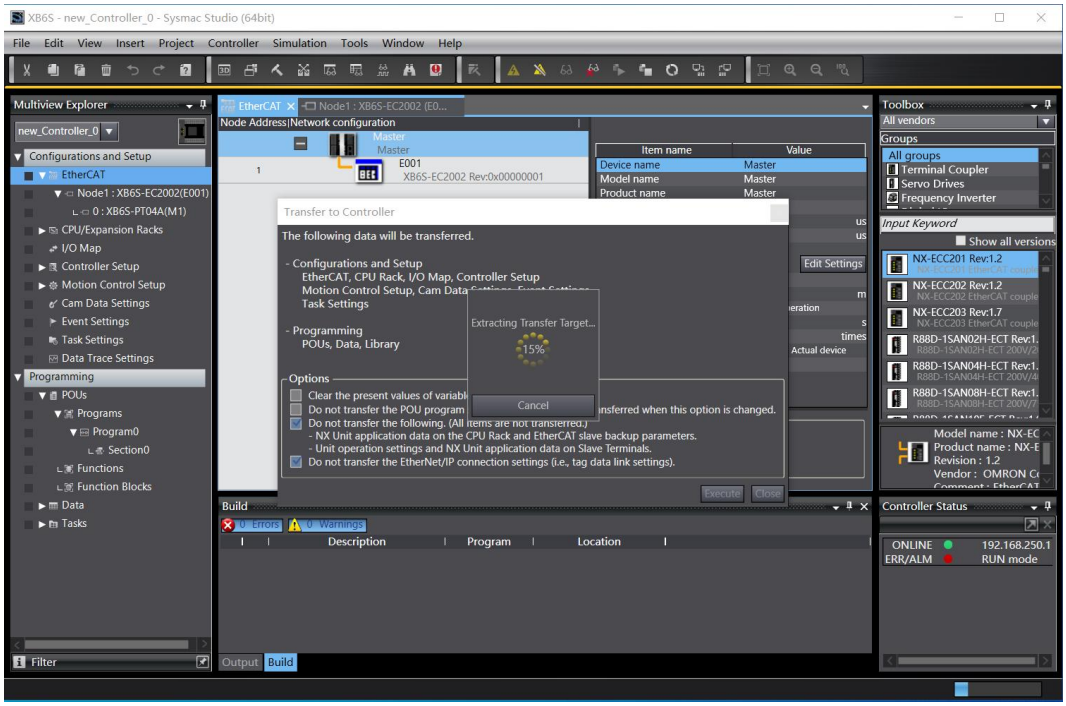


6、Download the configuration to the PLC

a. Click the menu bar "Controller -> Transfer (A) -> To Controller (T)" button, as shown in the figure below.

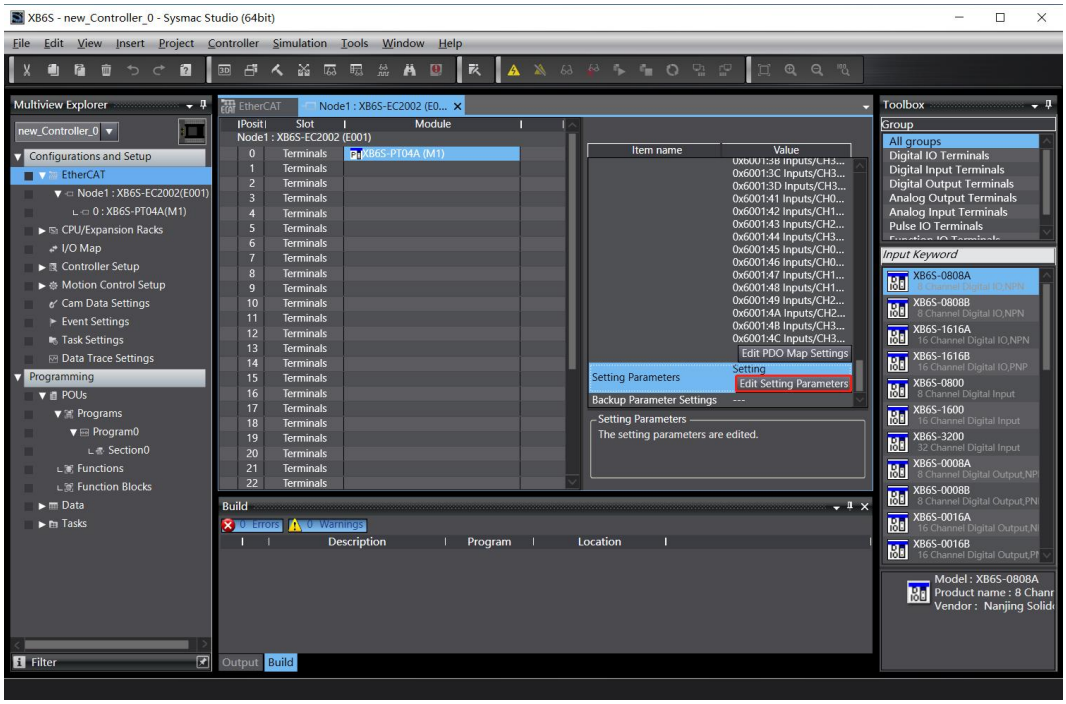


b. Download the configuration to the PLC. A pop-up window will pop up to confirm the transfer. Click "Execute". In the subsequent pop-up windows, click "Yes/OK" in sequence, as shown in the figure below. After the download is complete, you need to power on again.



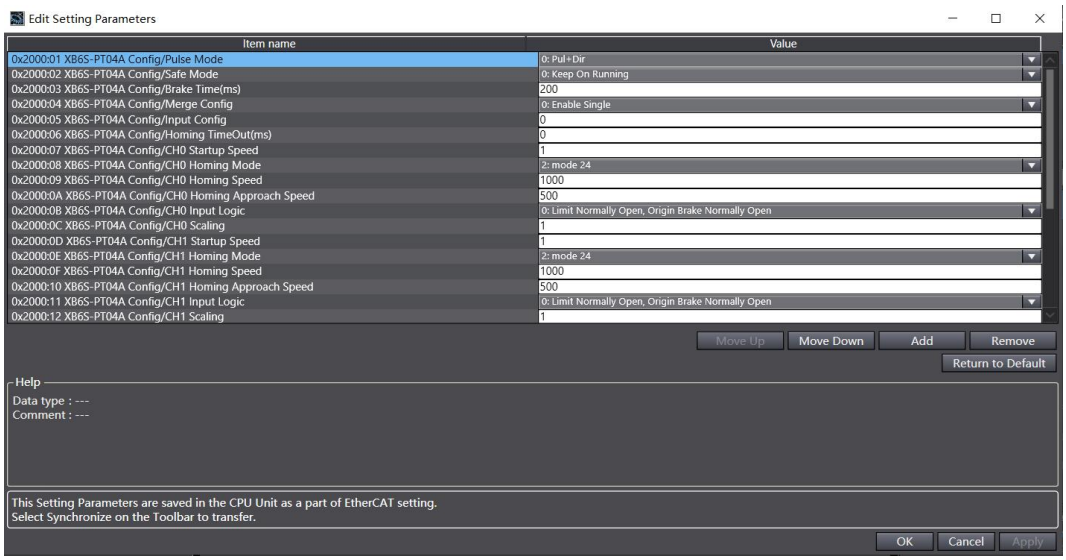
7、Parameter settings

a. Switch the configuration to offline state, edit the module configuration page in node 1, select the XB6S-PT04A module, and click "Edit Setting Parameters", as shown in the figure below.

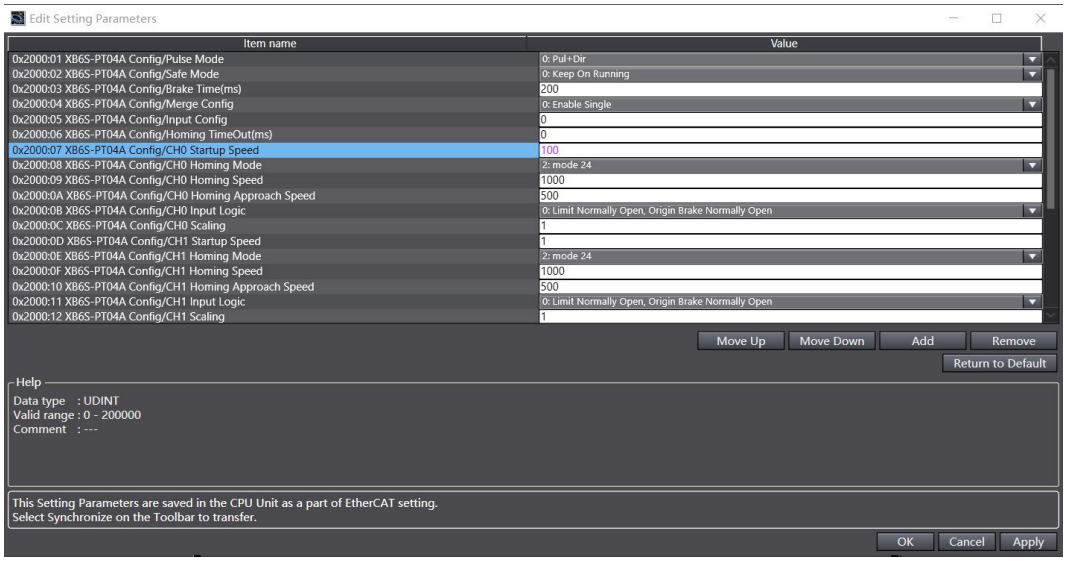


Note: IfThe PLC firmware version is too low, and the EC_CoESDOWrite and EC_CoESDORead instructions are required to write and read the SDO address.

b. Exist On the XB6S-PT04A parameter setting page, you can see the configuration parameters. Click any parameter to set the related configuration, as shown in the figure below.

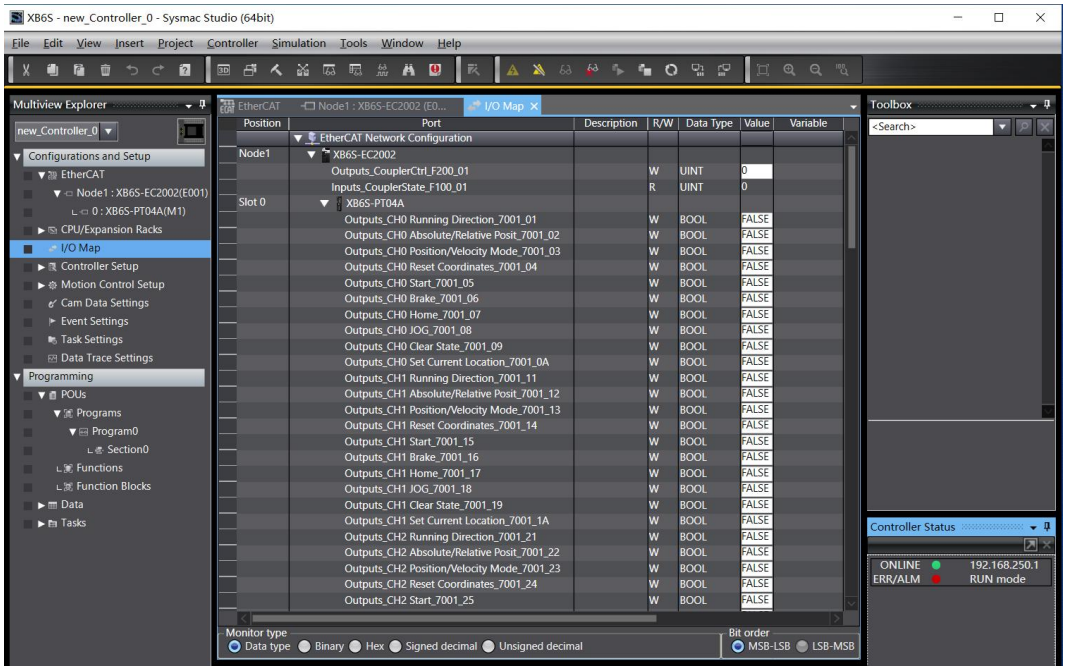


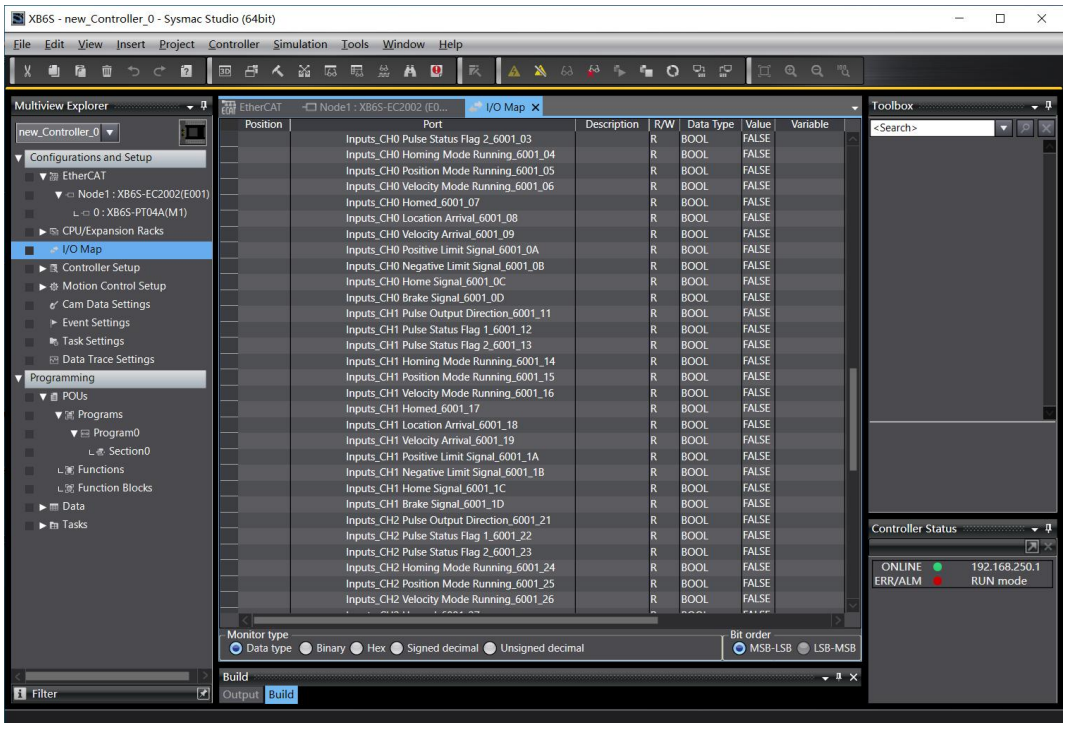
c. For example, to modify the startup speed parameter of channel 0, click "CH0 Startup Speed" and modify the parameter value, as shown in the figure below. After all parameters are configured, you need to re-download the program to the PLC, and the PLC and module need to be powered on again.



8、I/O Function

a. Double-click “I/O Map” in the left navigation tree to view the mapping table of the modules in the topology, so as to monitor the channel input and output values, as shown in the following figure.

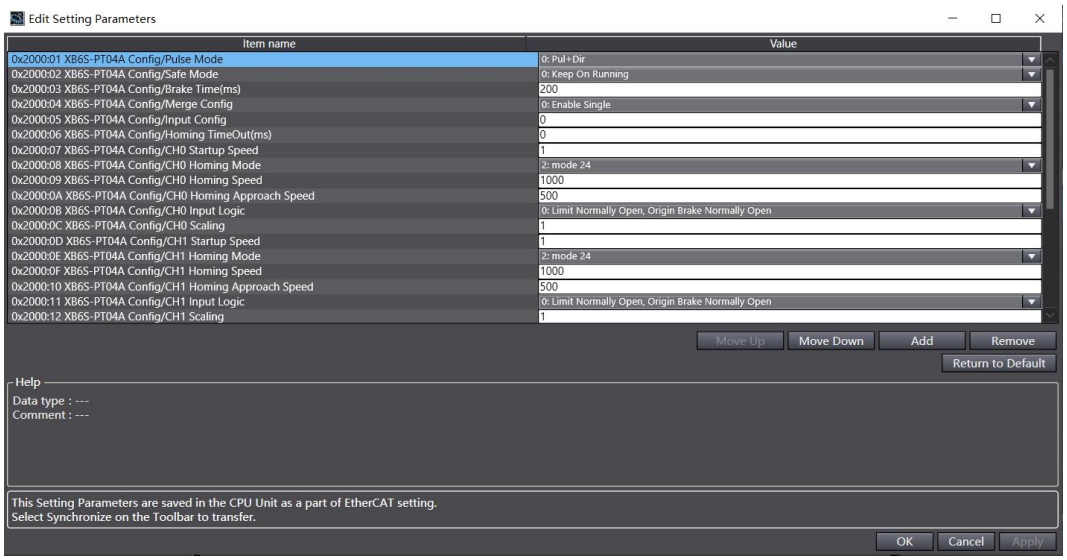




Module Functionality Examples

◆ **Channel 0 runs 50,000 pulses in the forward direction at a speed of 100,000 Hz**

a. Configure the configuration parameters as shown in the following figure.



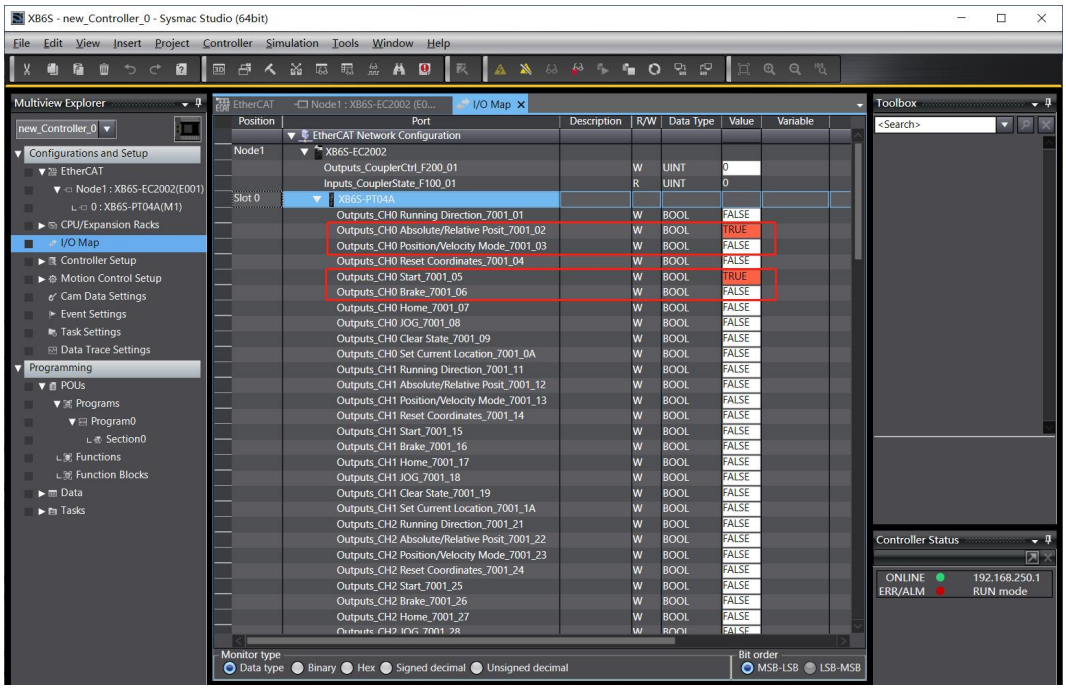
After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

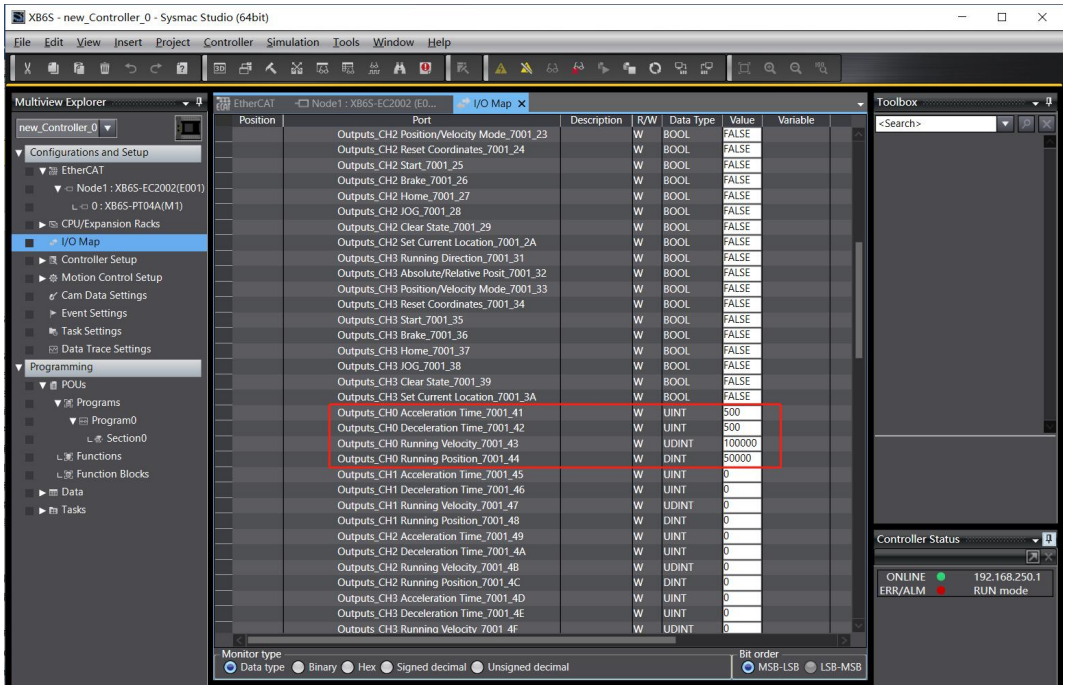
b. Set channel 0 to relative position mode;

c. Configure channel 0 to run with 50000 steps, 100000 Hz running speed, and 500 acceleration/deceleration time.

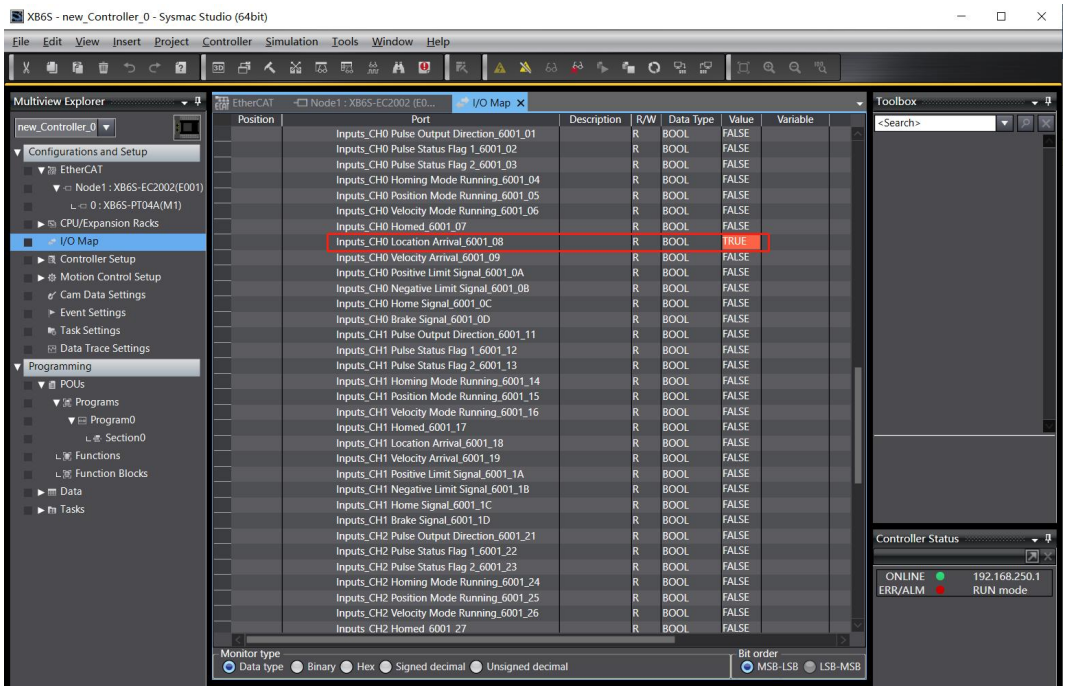
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1, as shown in the figure below.

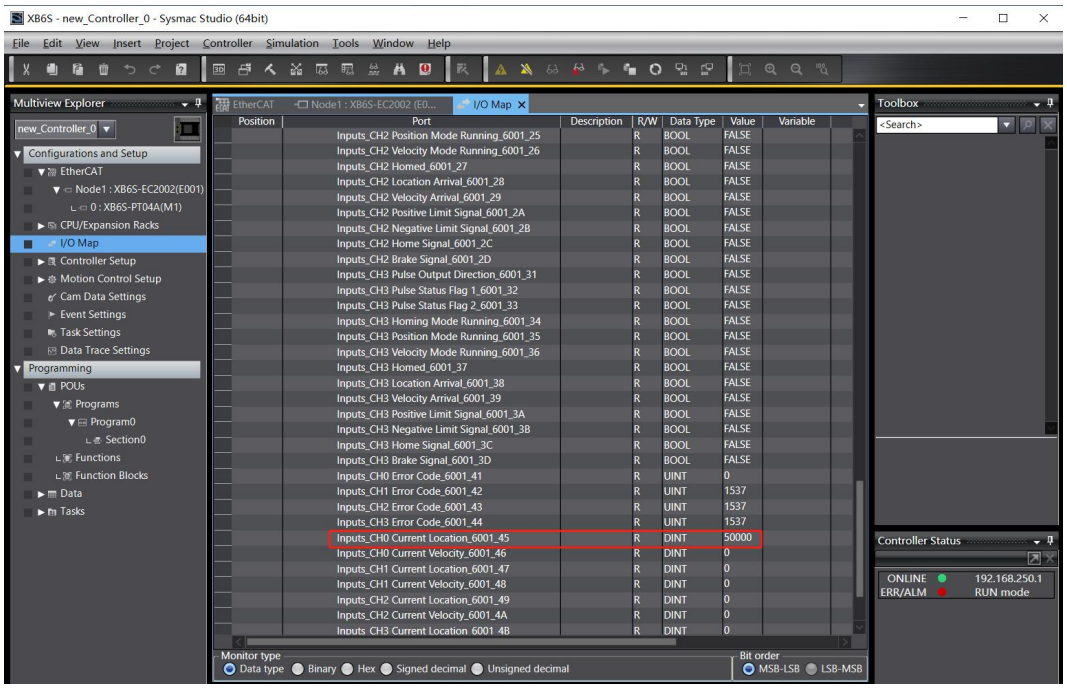




f. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.

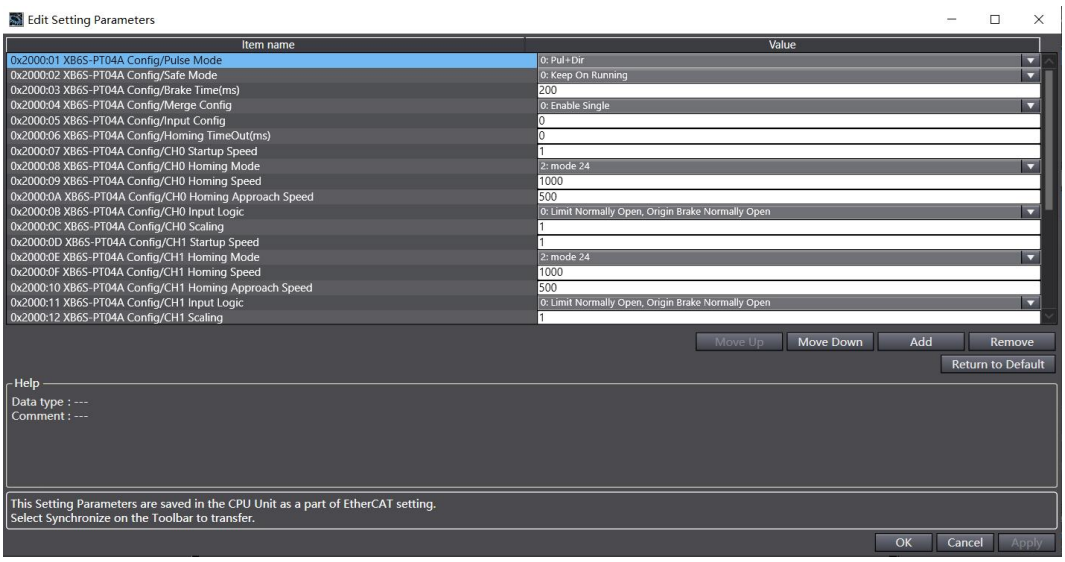


g. You can also see that the current coordinate of channel 0 is 50000, as shown in the figure below.



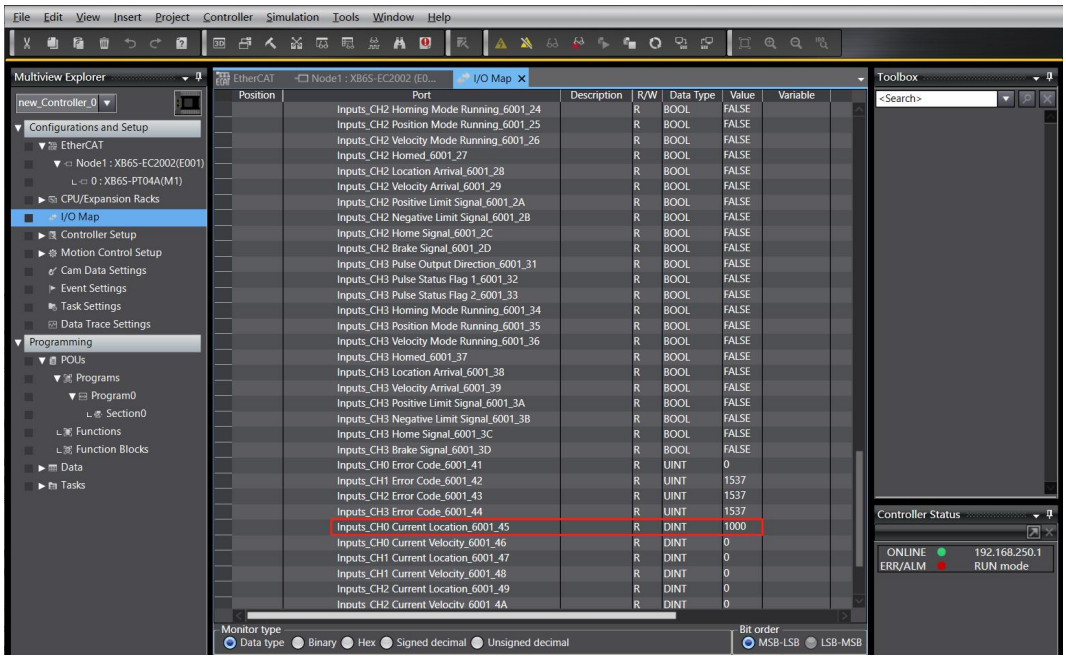
◆ **Channel 0 is currently at 1000, moves to -20000, and runs at a speed of 100000 Hz**

a. Configure the configuration parameters as shown in the following figure.



After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

b. The current position of channel 0 is 1000, as shown in the figure below.

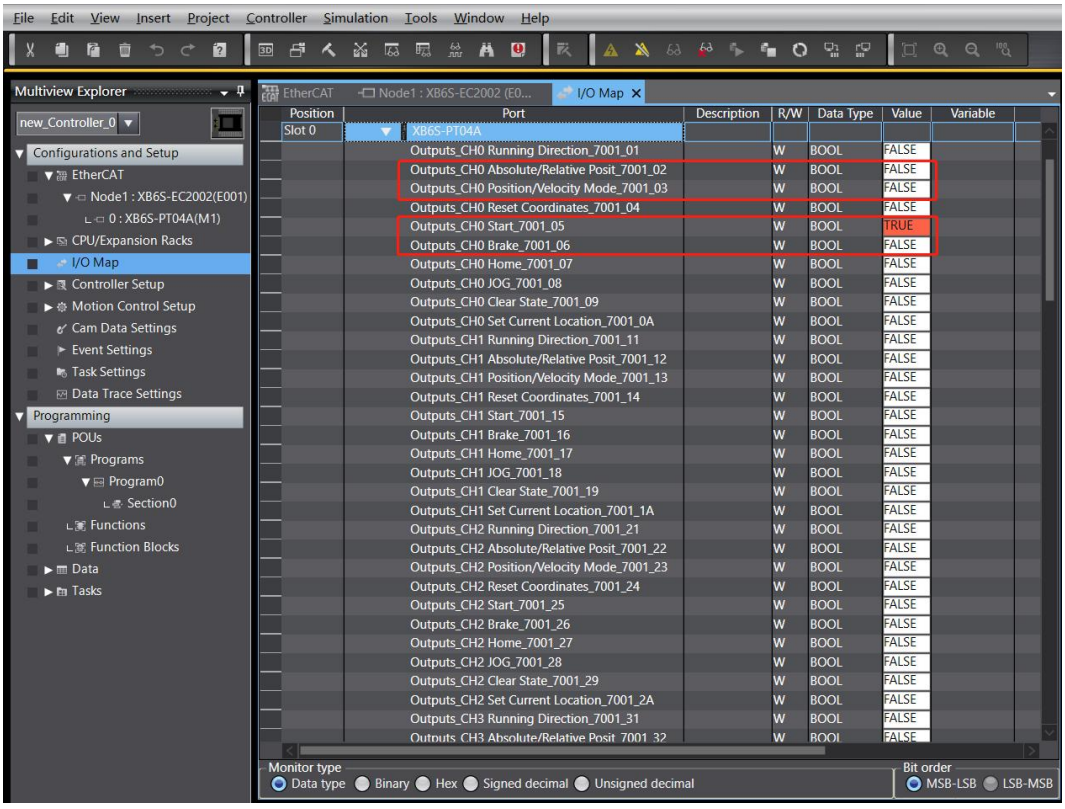


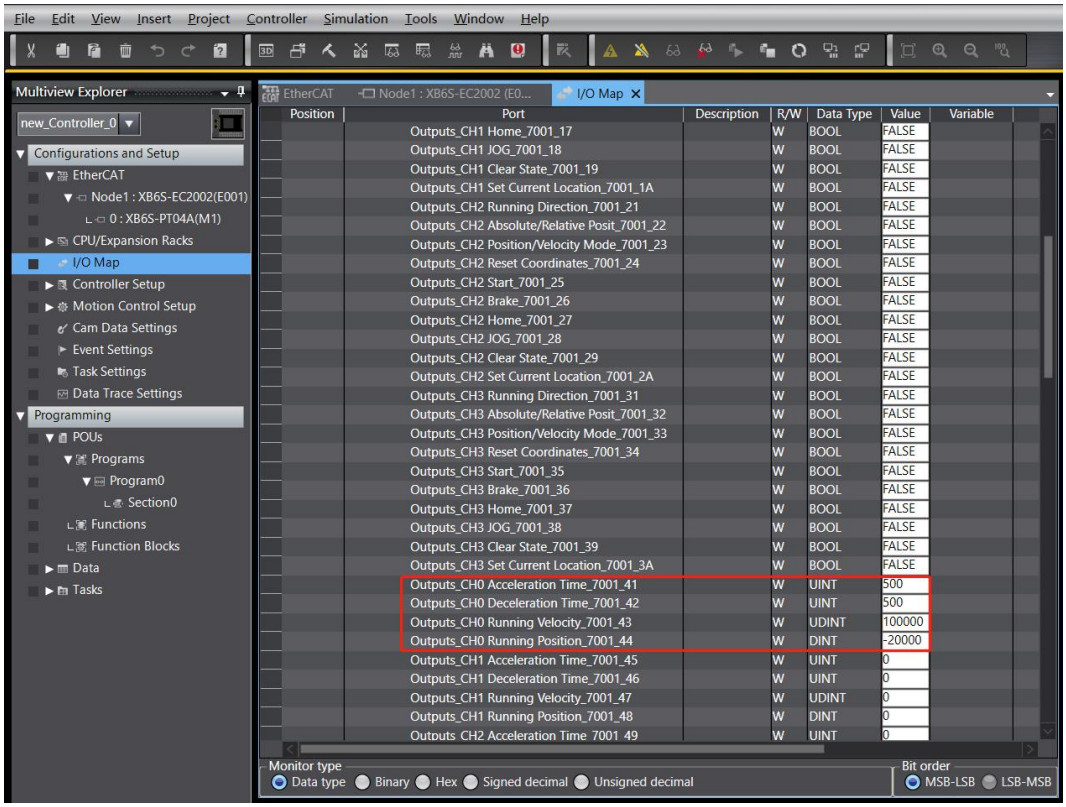
c. Set channel 0 to absolute position mode;

d. Configure channel 0 to run at -20000 steps, 100000 Hz speed, and 500 acceleration and deceleration times;

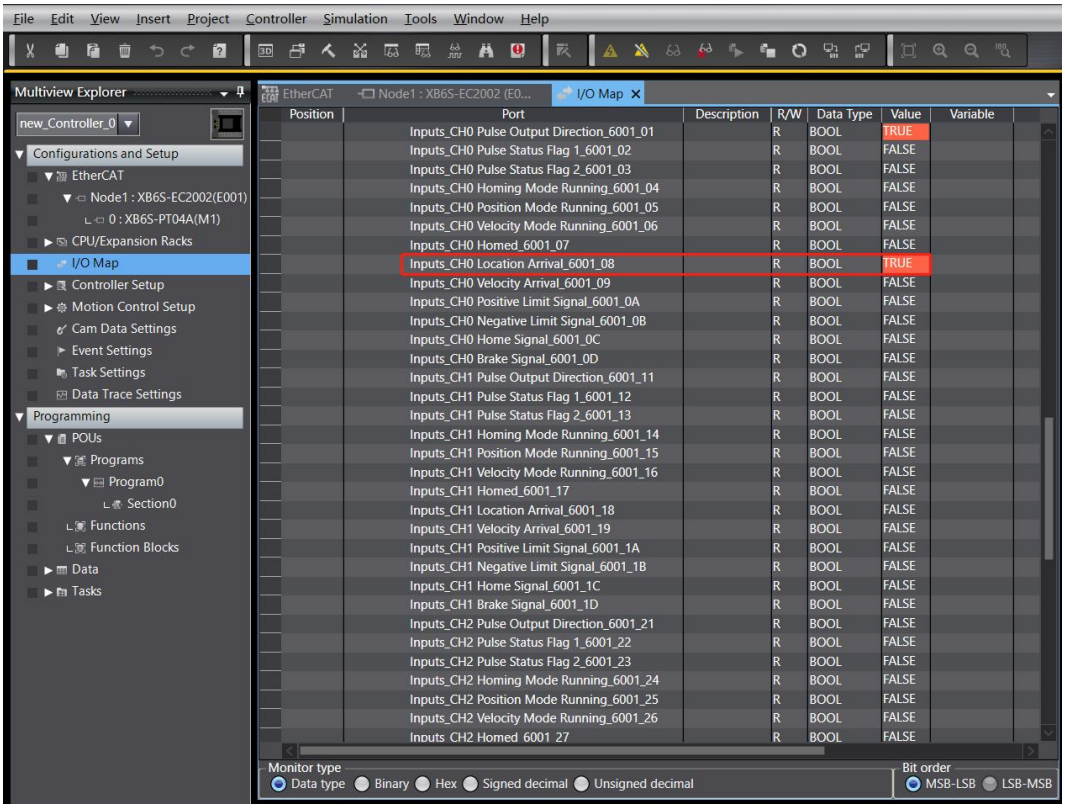
e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

f. Set the start command of channel 0 from 0 to 1, as shown in the figure below.

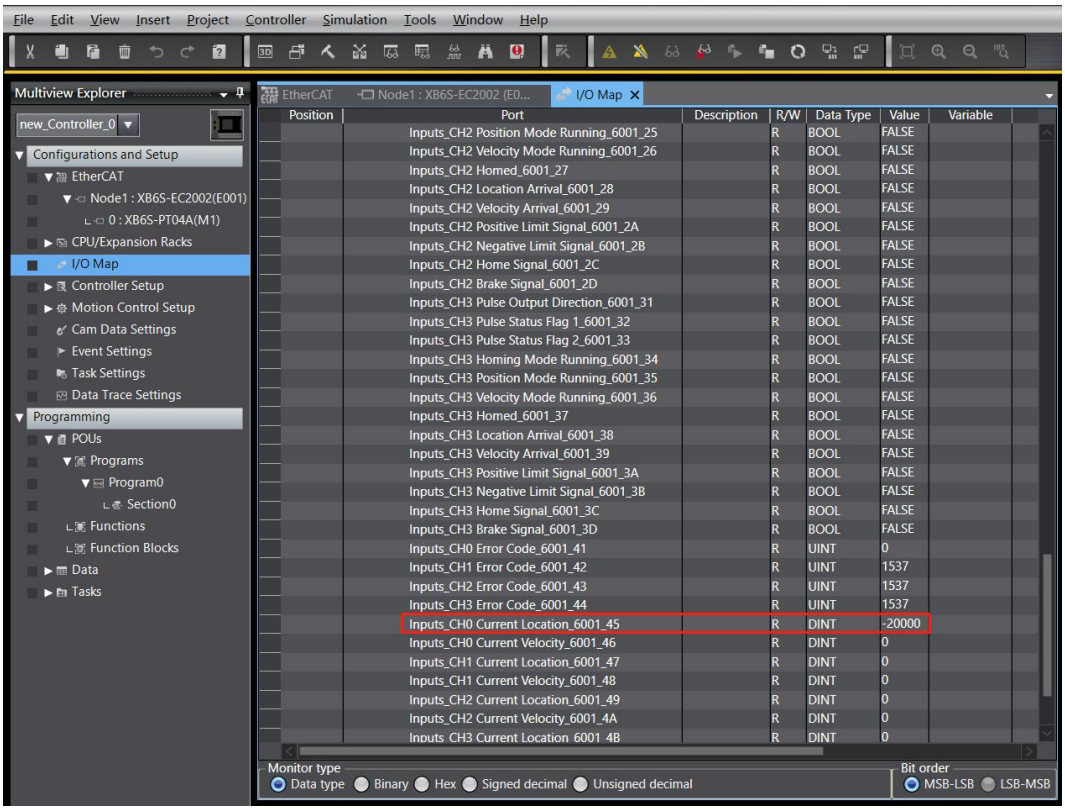




g. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.

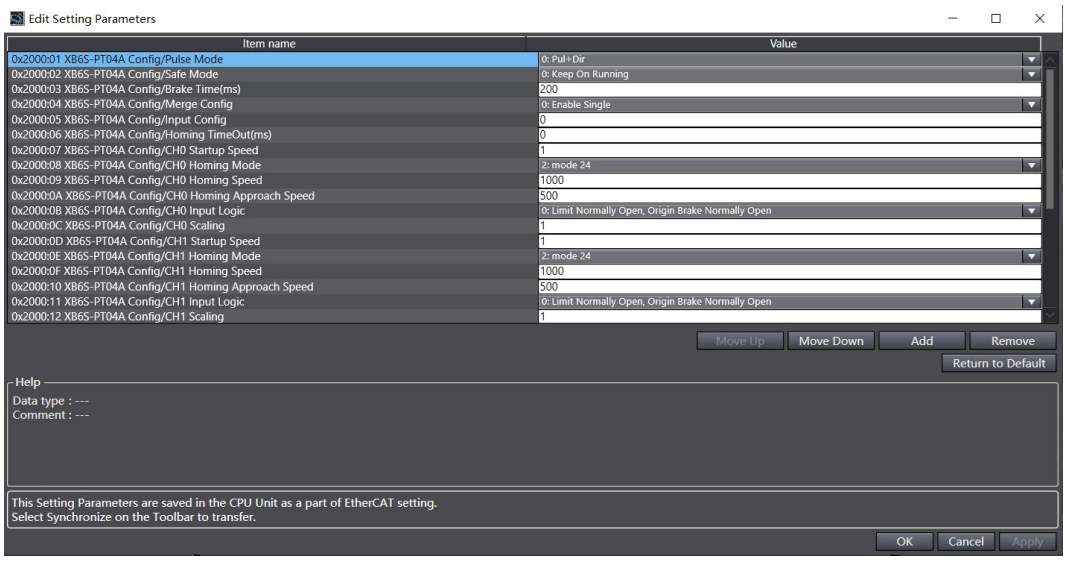


h. You can also see that the current coordinate of channel 0 is -20000, as shown in the figure below.



◆ **Channel 0 turns on speed mode, running speed 100000Hz**

a. Configure the configuration parameters as shown in the following figure.



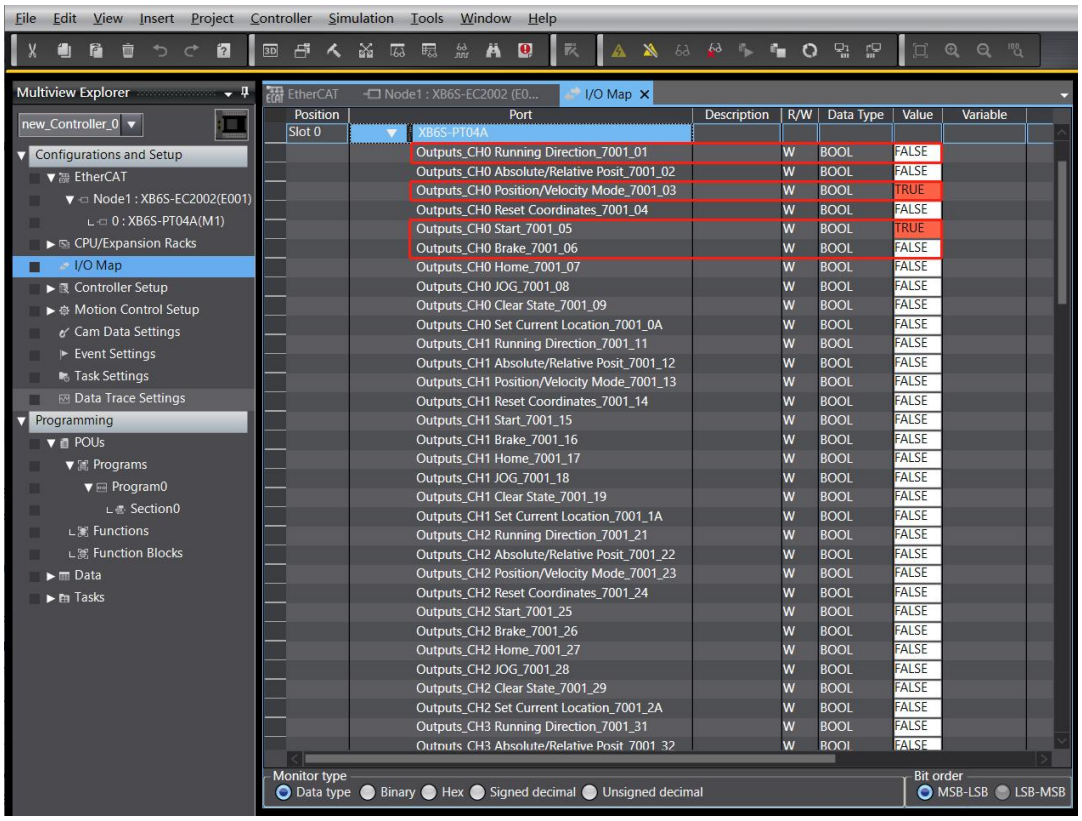
After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

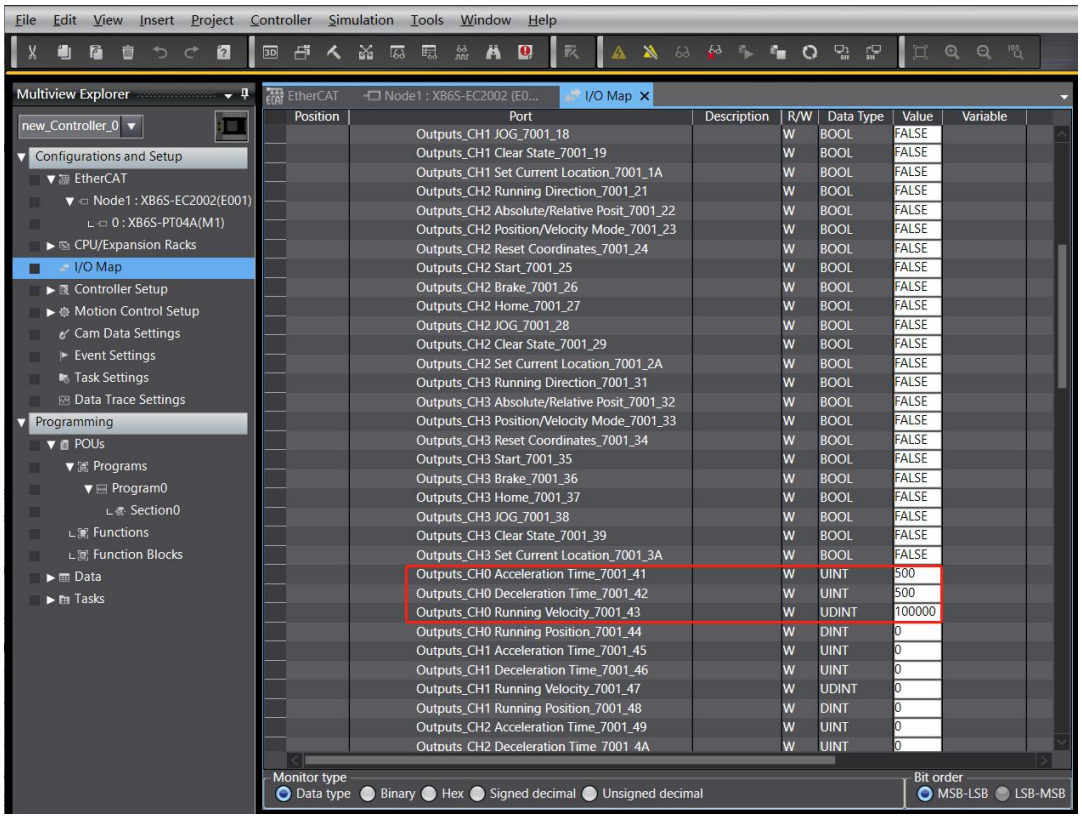
b. Set channel 0 to speed mode;

c. Configure channel 0 to run at a speed of 100000 Hz and move in a forward direction of 0;

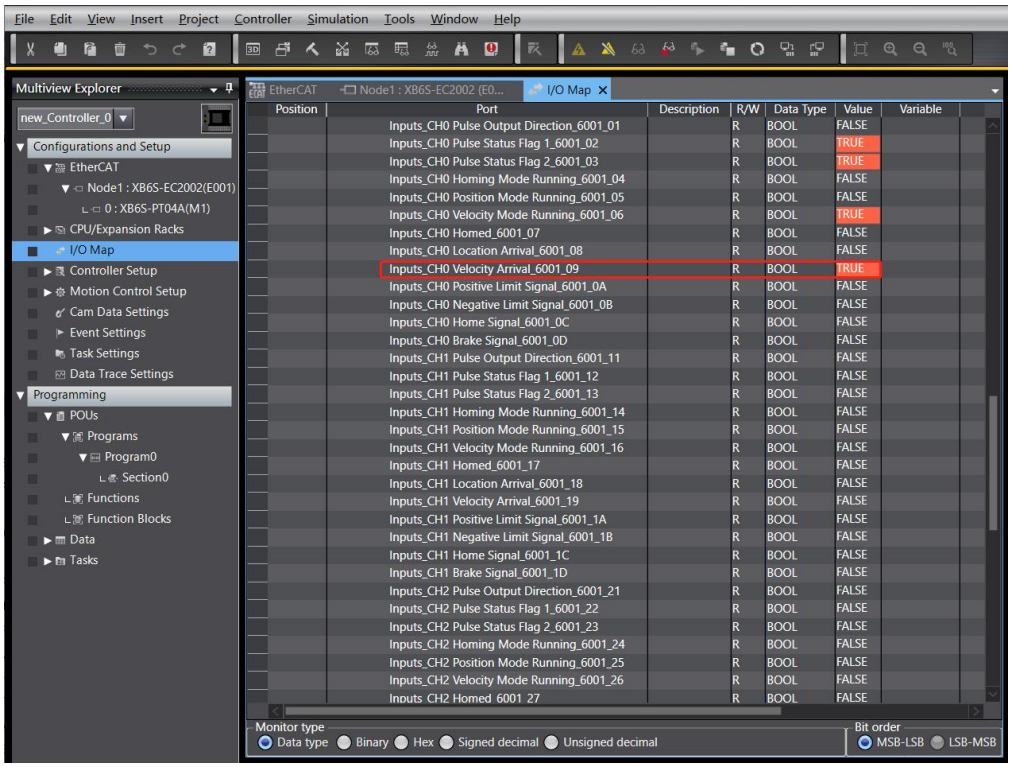
d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.

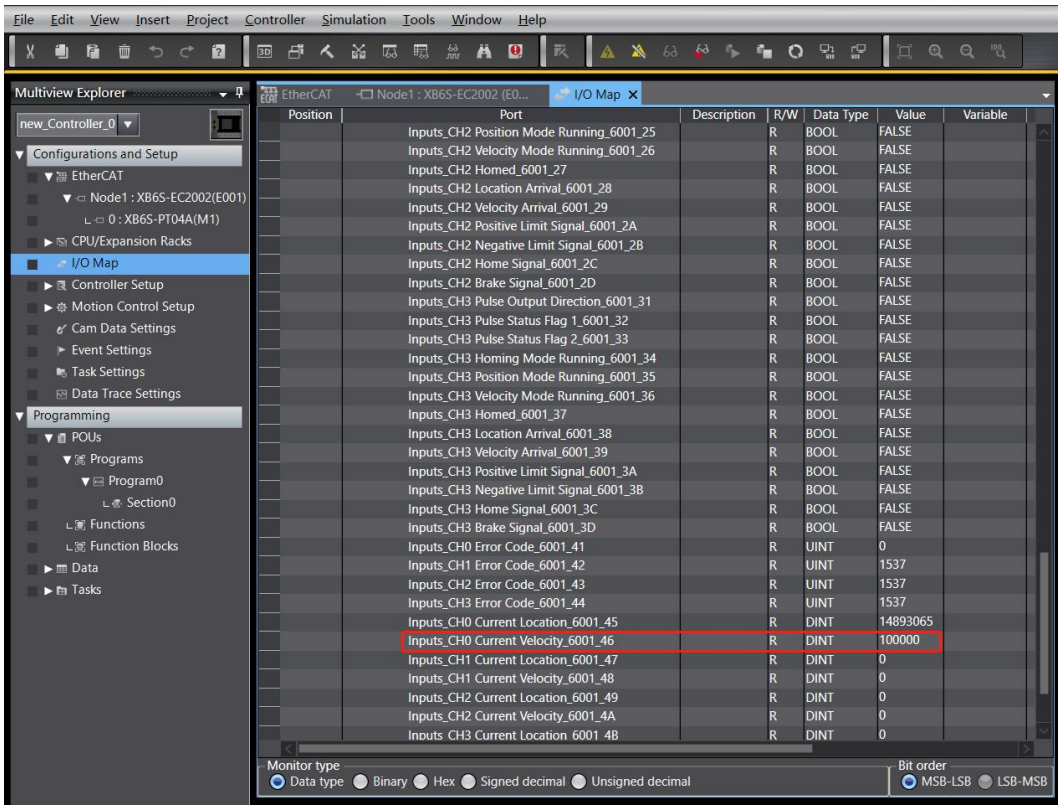




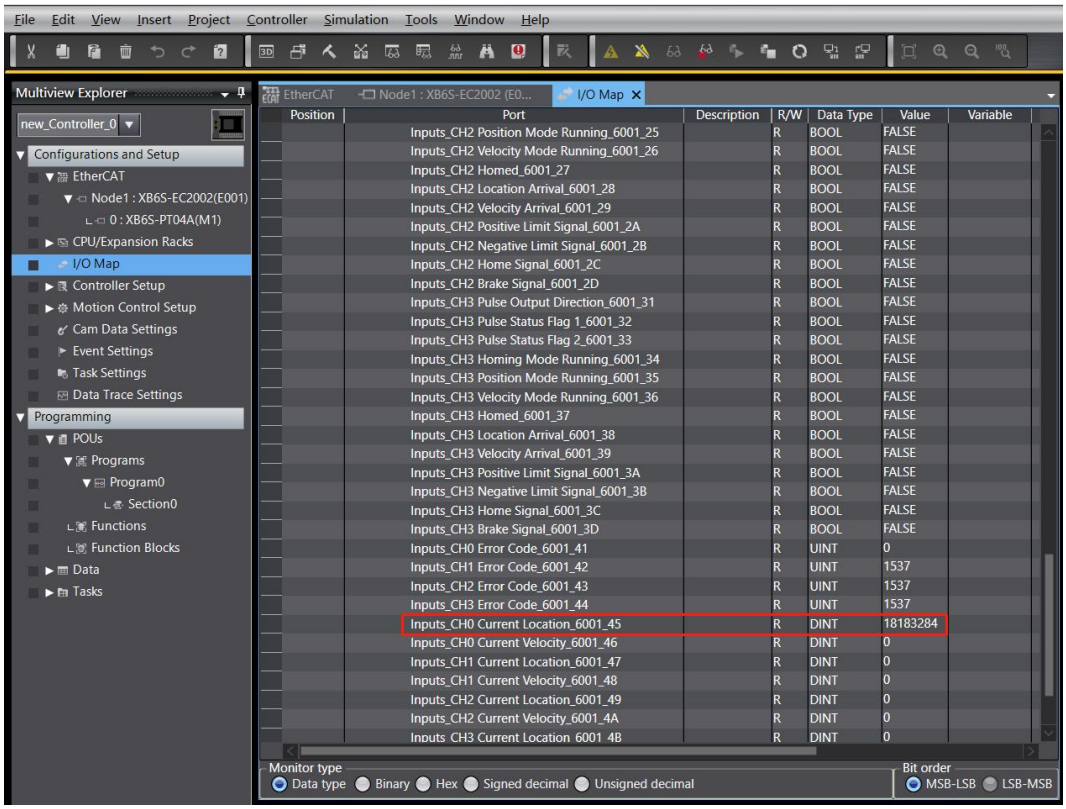
f. During the motion, you can see that the channel 0 speed arrival is set to 1, as shown in the figure below.



g. During the movement, the actual running speed can also be 100000Hz, as shown in the figure below.

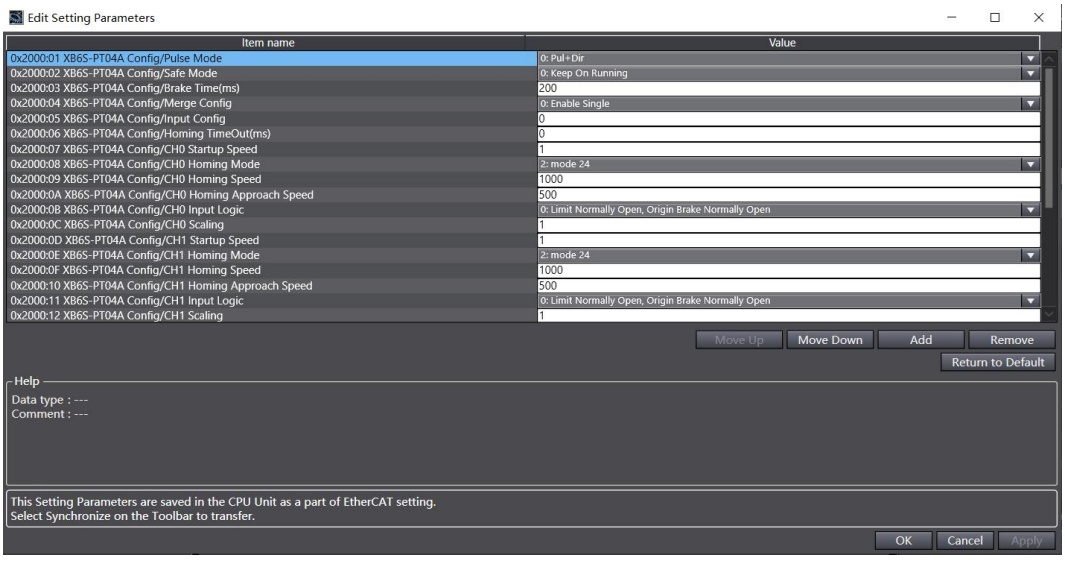


h. Entering a brake command or triggering a positive limit signal can stop the movement, as shown in the figure below.



◆ **Channel 0 runs at 100000Hz, in jog mode**

a. Configure the configuration parameters as shown in the following figure.

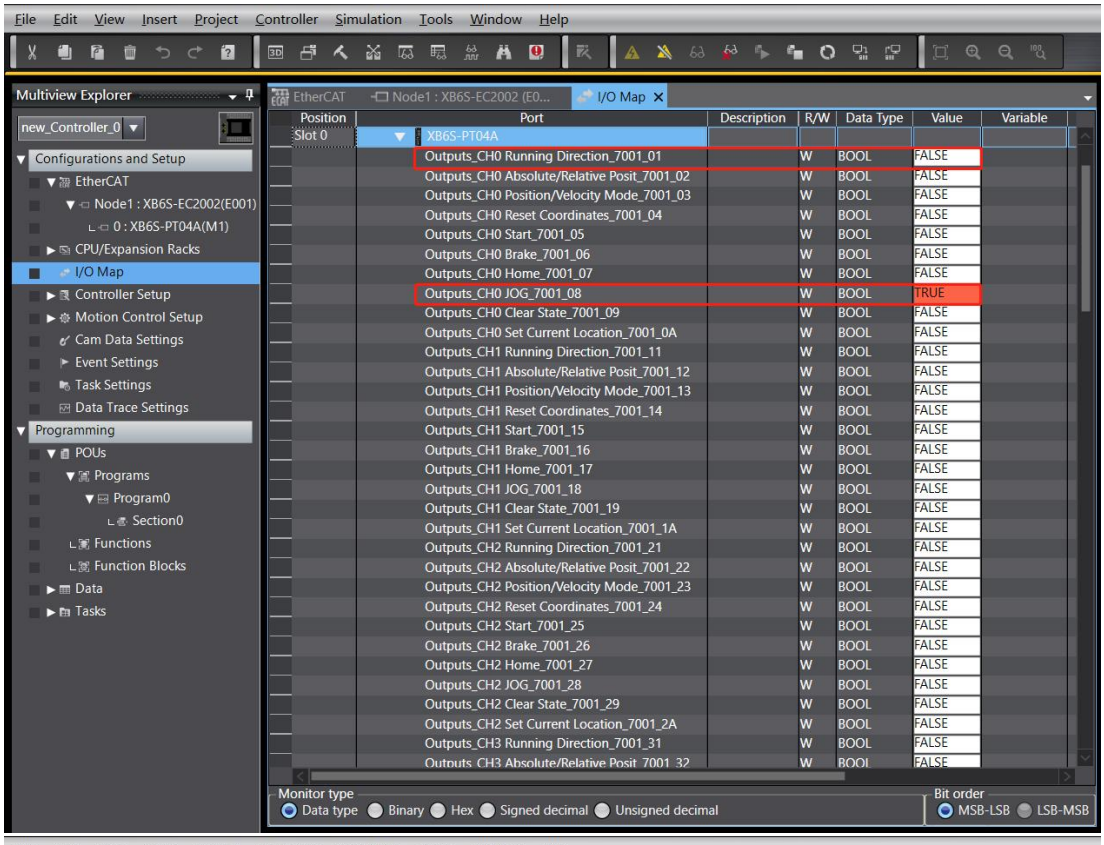


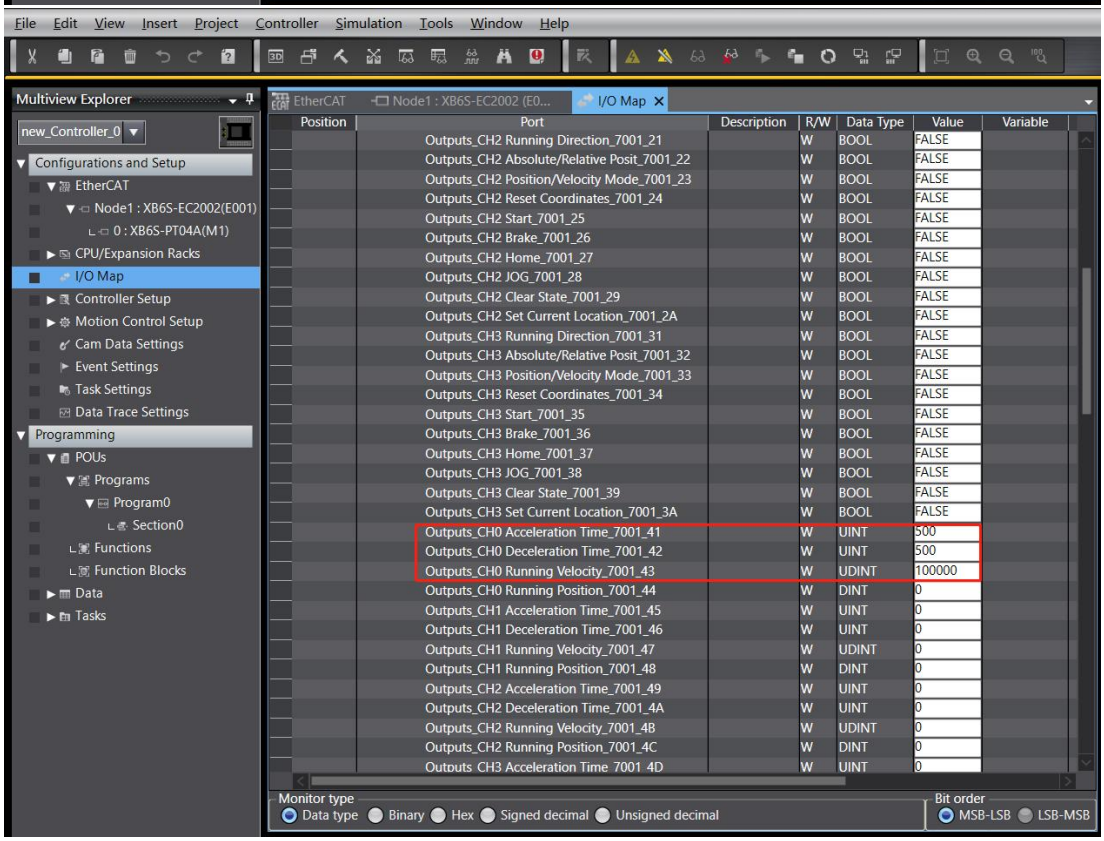
After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

b. Configure channel 0 to run at a speed of 100000, run in a direction of 0 forward, and set the acceleration and deceleration times to 500;

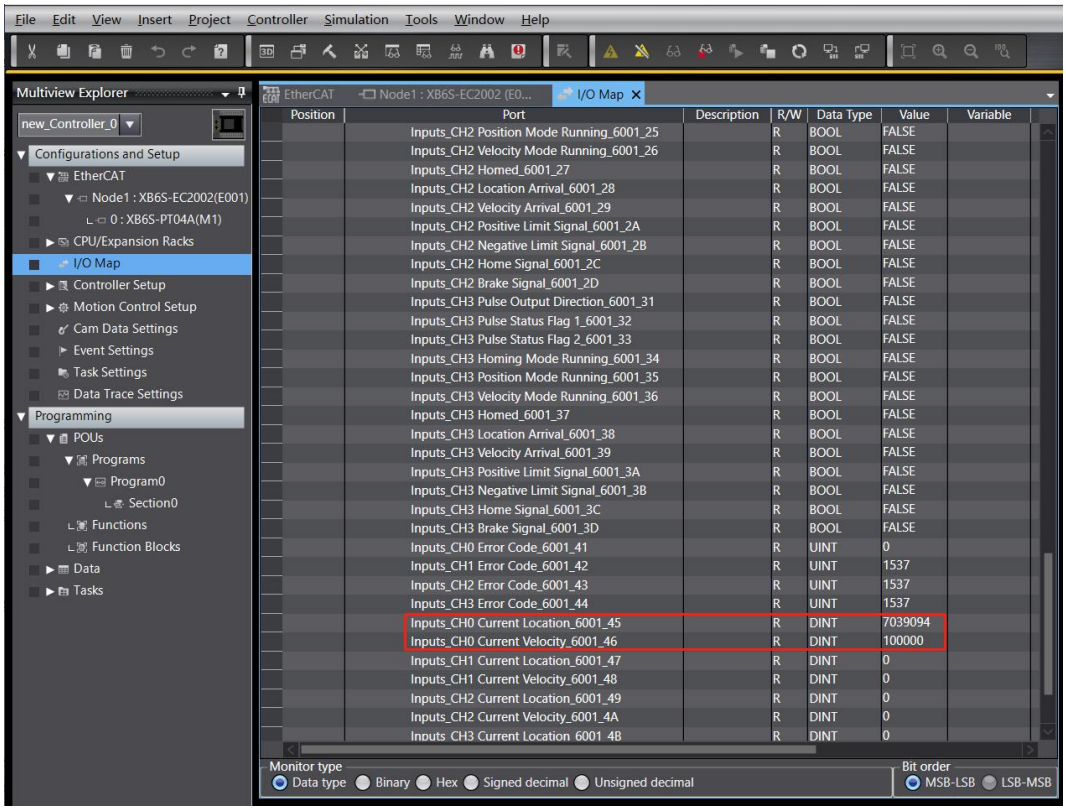
c. Make sure channel 0 is in a static state;

d. Set the jog command of channel 0 from 0 to 1 to start movement, as shown in the figure below.



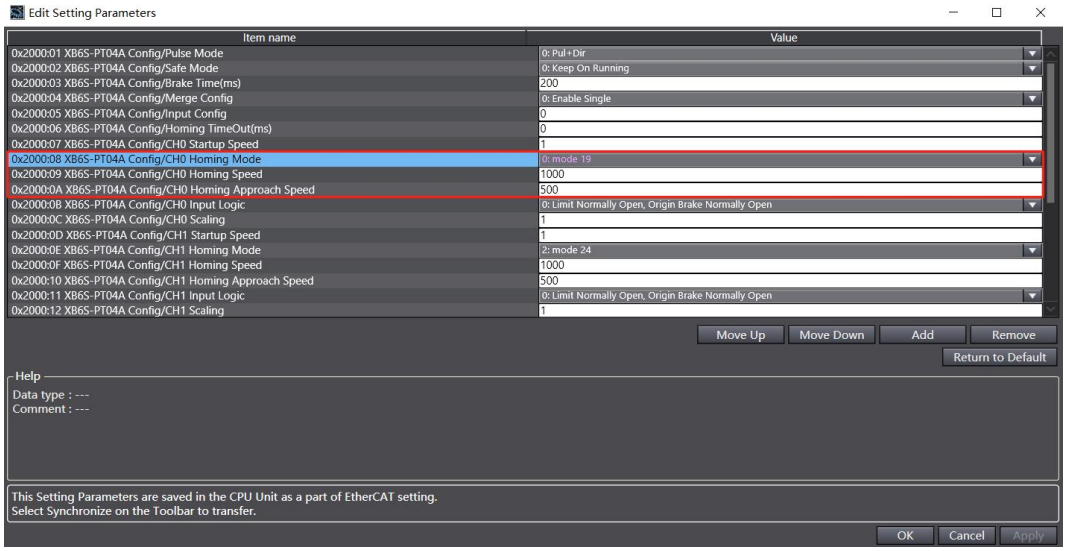


e. During the motion, you can see the actual running speed and real-time position of channel 0, as shown in the figure below. Inputting a brake command or triggering a positive limit signal can stop the motion.



◆ **Channel 0 turns on and returns to zero**

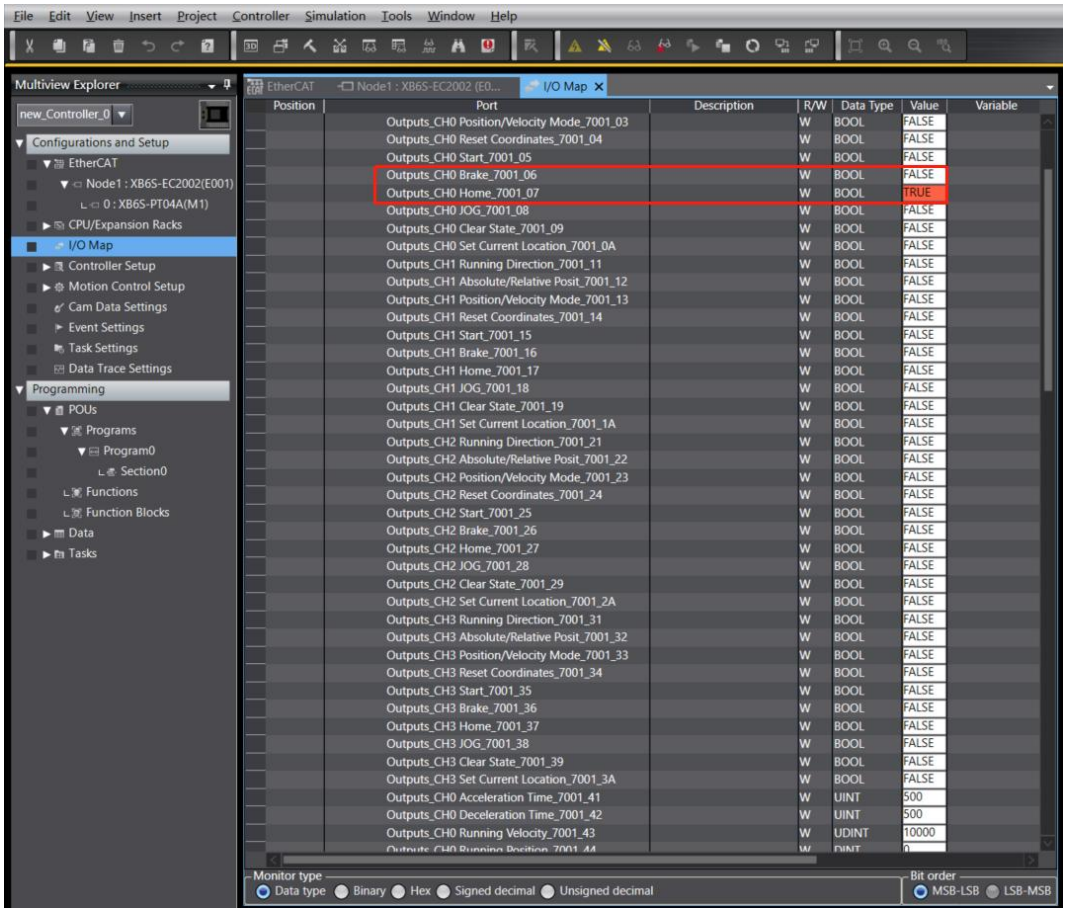
a. Configure the configuration parameters, select the homing mode and set the homing speed and homing approach speed, as shown in the figure below.



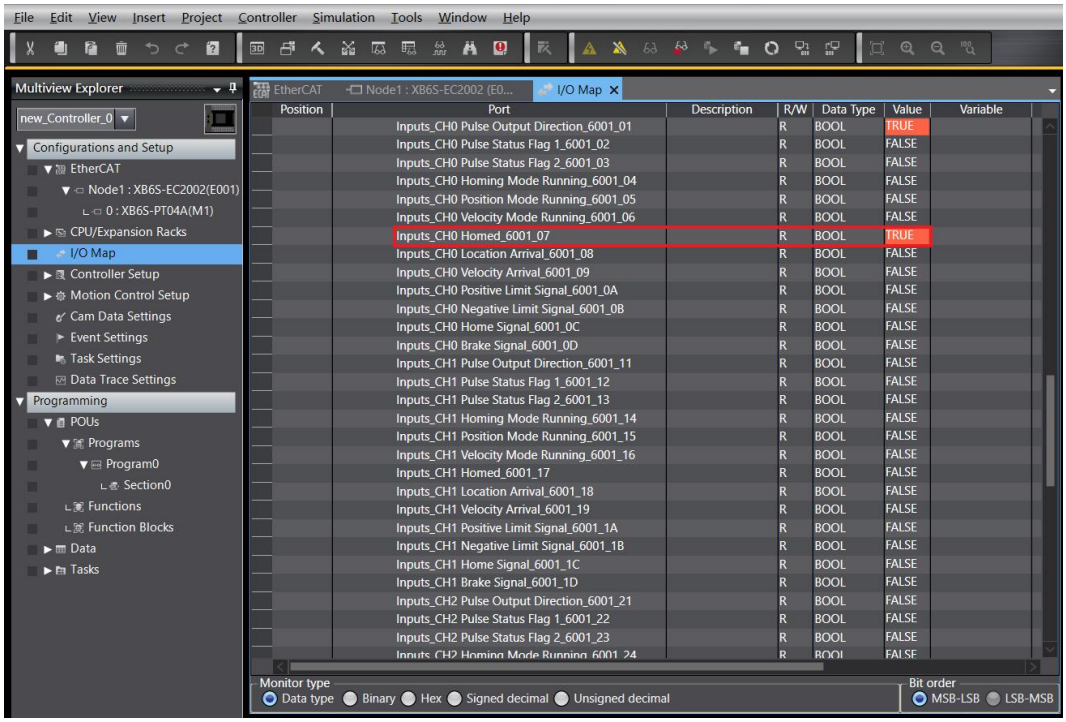
After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

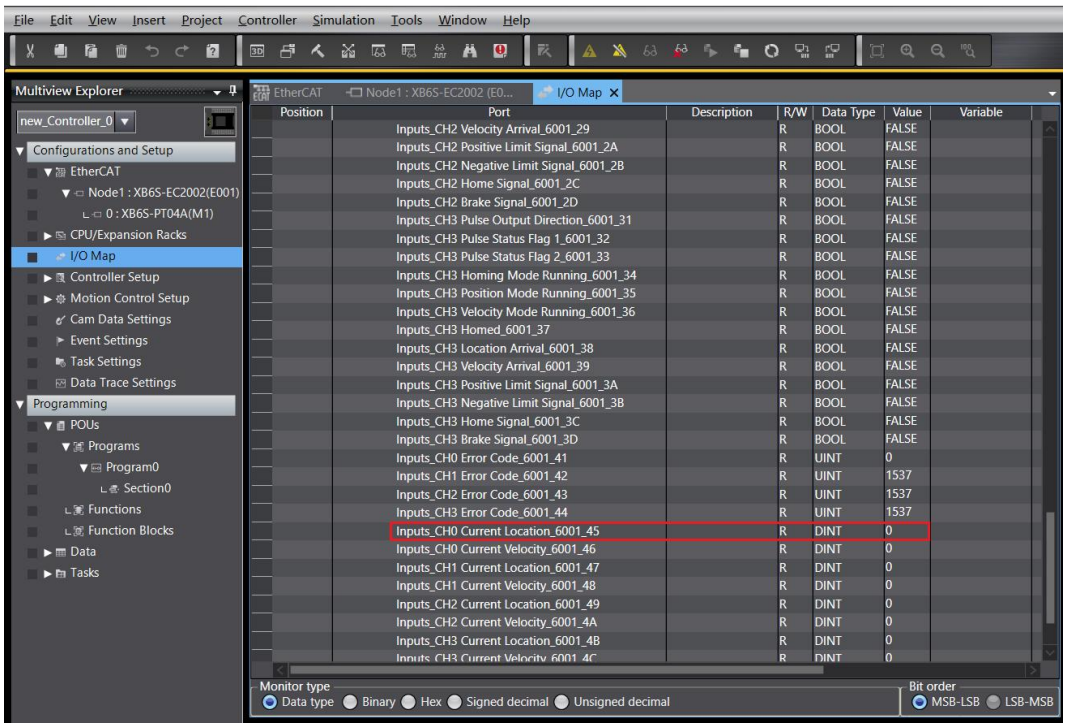
b. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

c. Set the return to zero command of channel 0 from 0 to 1, as shown in the figure below.



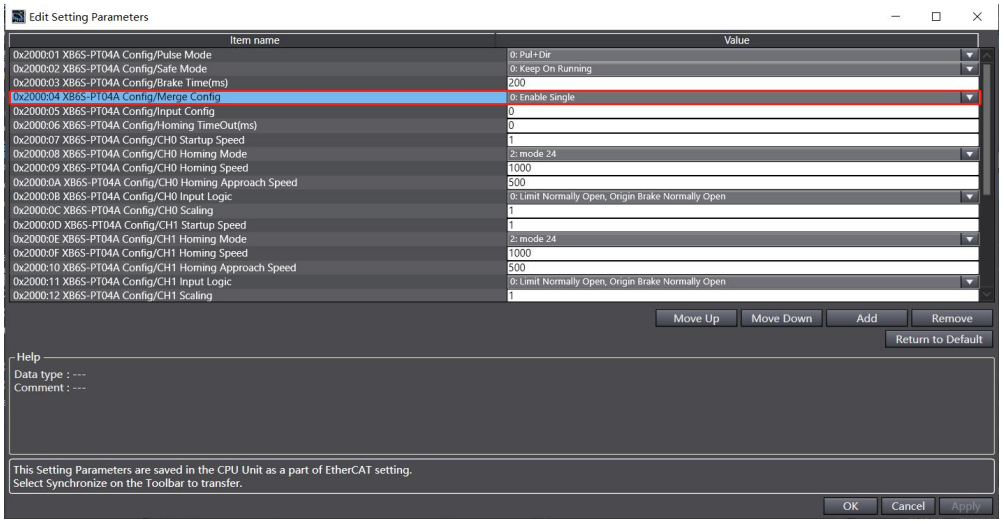
d. homing mode 19 requires input of origin signal. After inputting the origin signal, it decelerates to 0 and moves in the negative direction again at the homing approach speed until the origin signal disappears. Stop moving and homing is completed. You can see that the coordinates of channel 0 are cleared and the homing is set to 1, as shown in the figure below.





◆ **Channel 0 turns on speed mode, running at 100000Hz, and the speed is changed to 10000Hz during operation**

a. Configure the configuration parameters, such as enabling the single mode in the motion merge mode selection, as shown in the figure below.



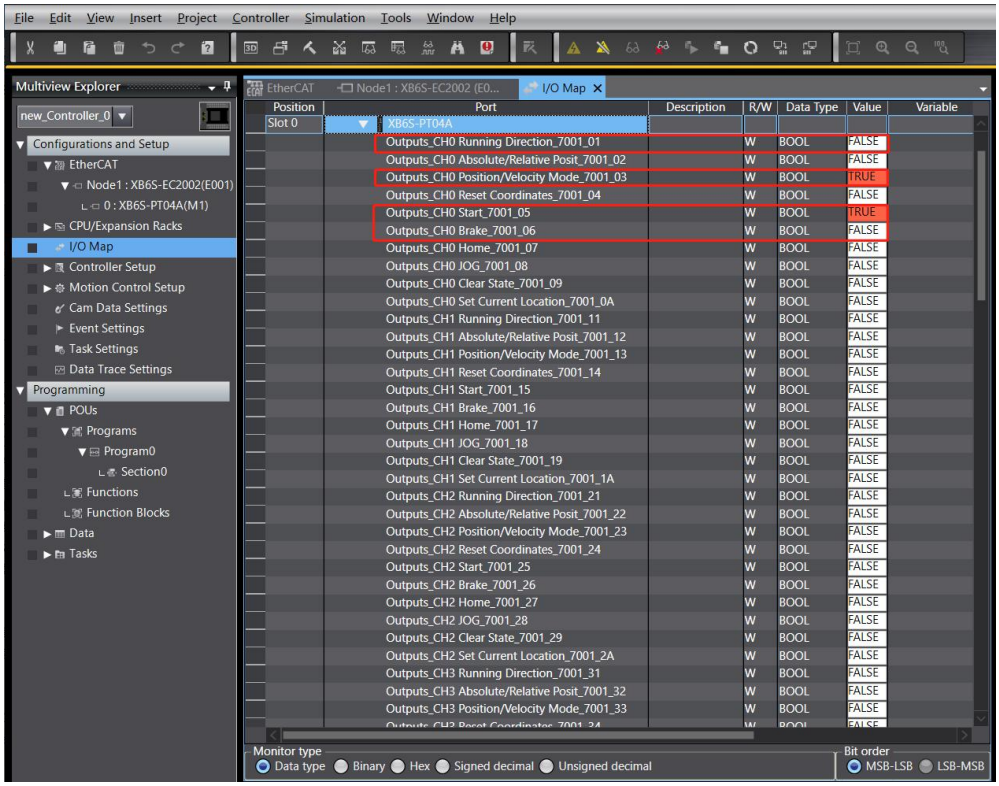
After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

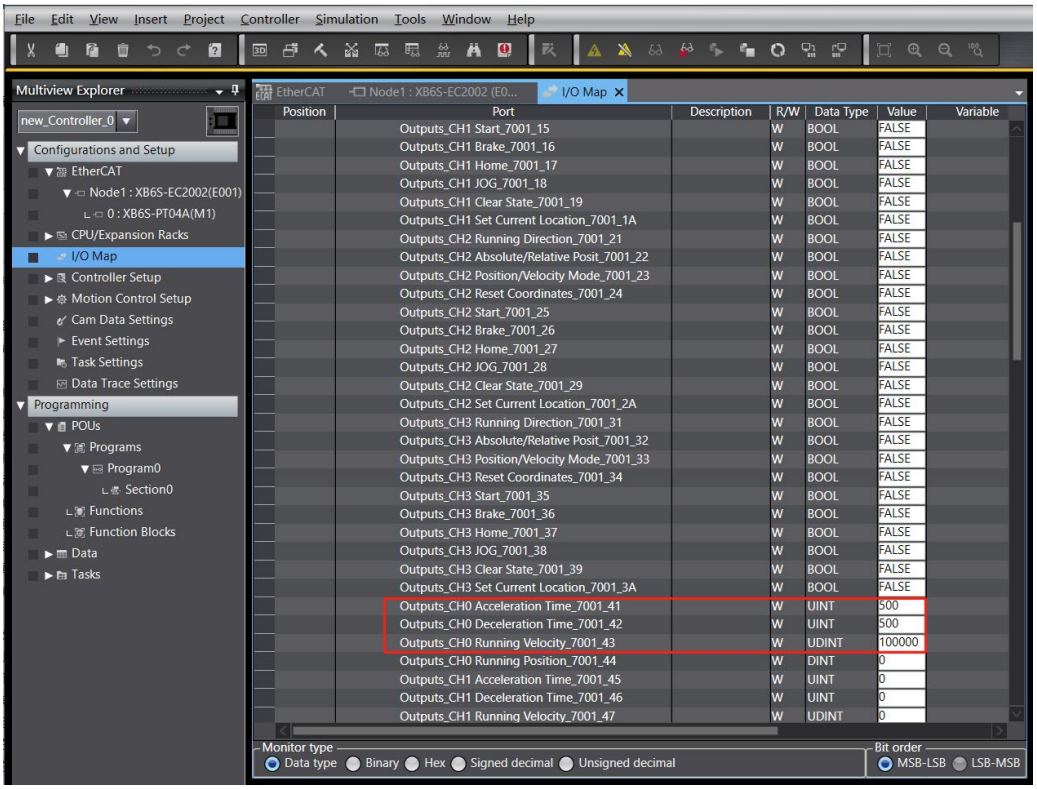
b. Set channel 0 to speed mode;

c. Configure channel 0 to run at a speed of 100000Hz, the direction of motion to 0 forward, and the acceleration and deceleration times to 500;

d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

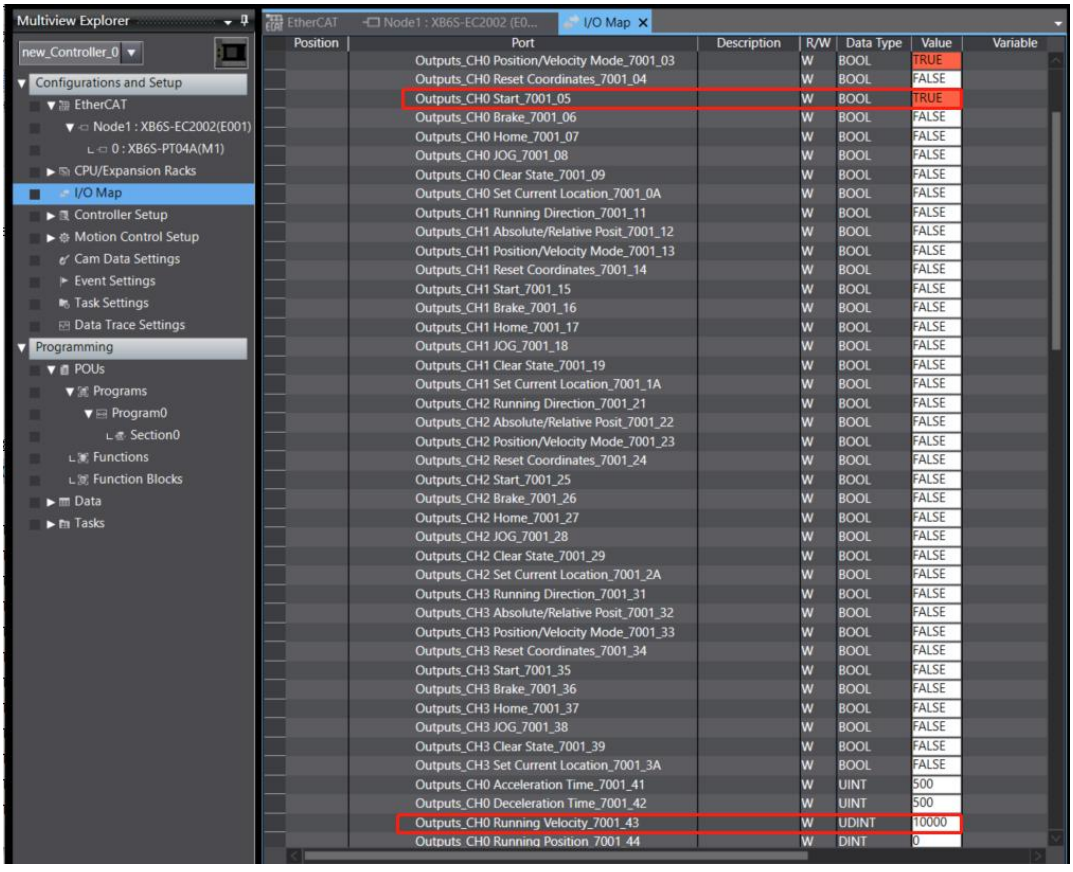
e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.



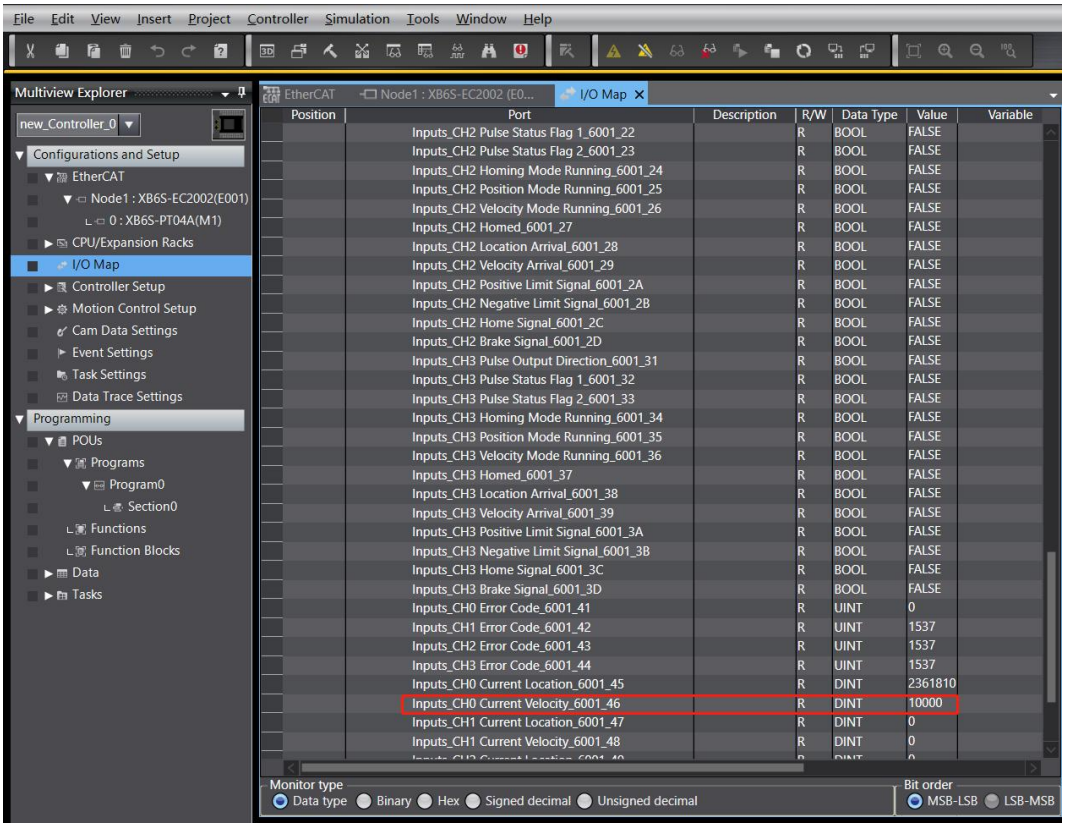


f. During the movement, change the running speed of channel 0 to 10000Hz;

g. Reset the start command of channel 0 from 0 to 1 to start motion merging, as shown in the figure below.

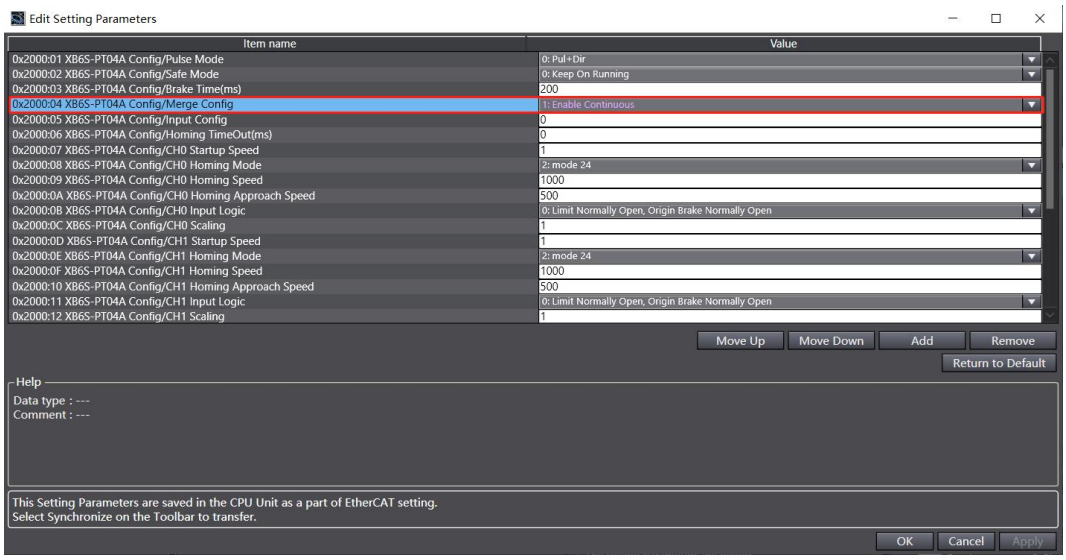


h. You can see that channel 0 slows down to 10000Hz motion, as shown in the figure below.



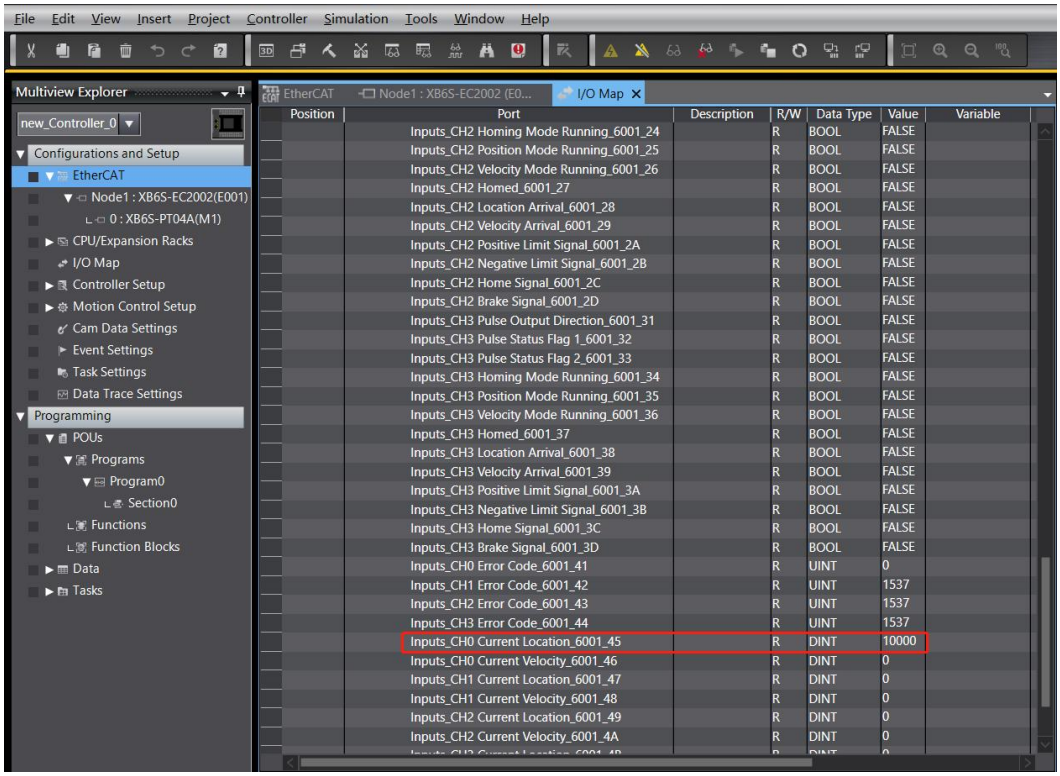
◆ **The current position of channel 0 is 10000, and it moves to the position of 20000. During the movement, the position is changed to 50000.**

a. Configure the configuration parameters, such as the motion merge mode selection to enable the continuous mode, as shown in the figure below.



After the parameter setting is completed, the Reload operation is required and the module is powered on again to enable the master station to automatically send the parameter settings.

b. The current position of channel 0 is 10000, as shown in the figure below.

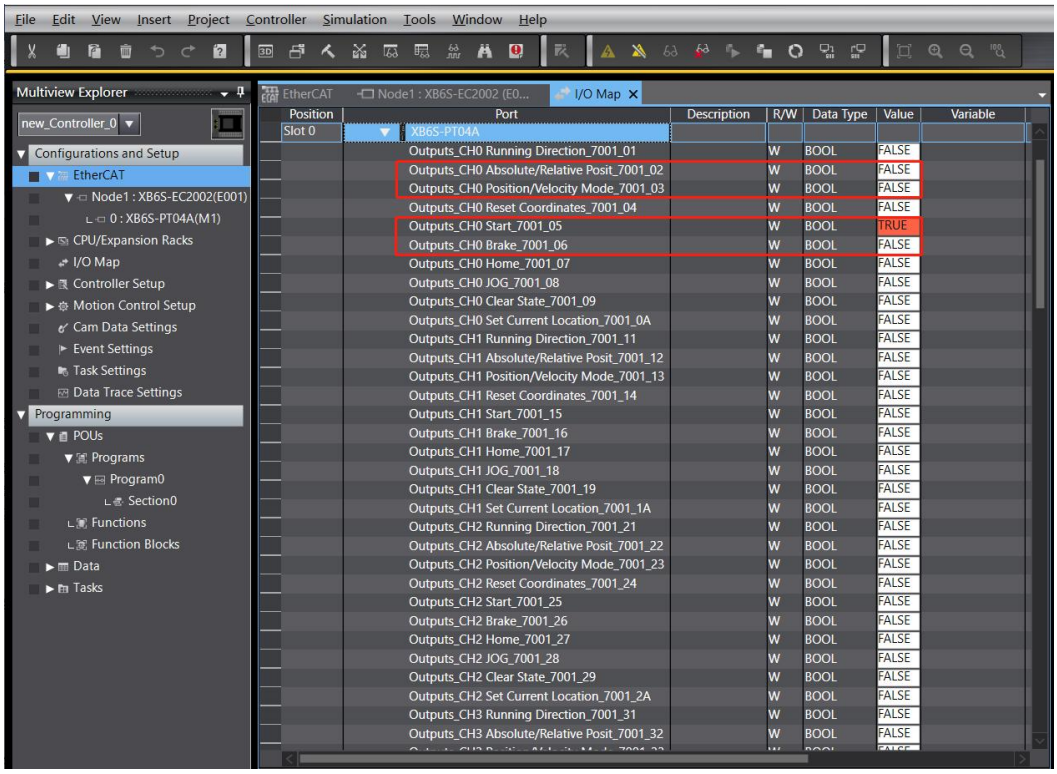


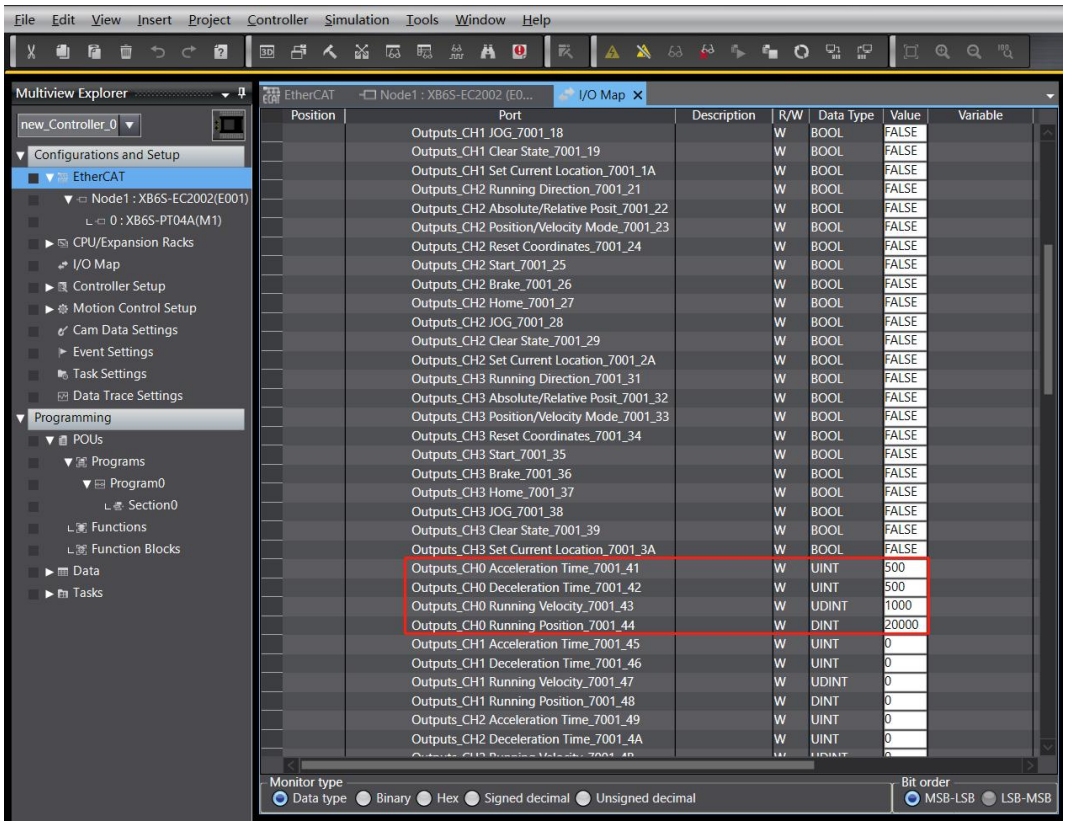
c. Set channel 0 to absolute position mode;

d. Configure channel 0 to run at 20000 steps, 1000 Hz speed, and 500 acceleration and deceleration times;

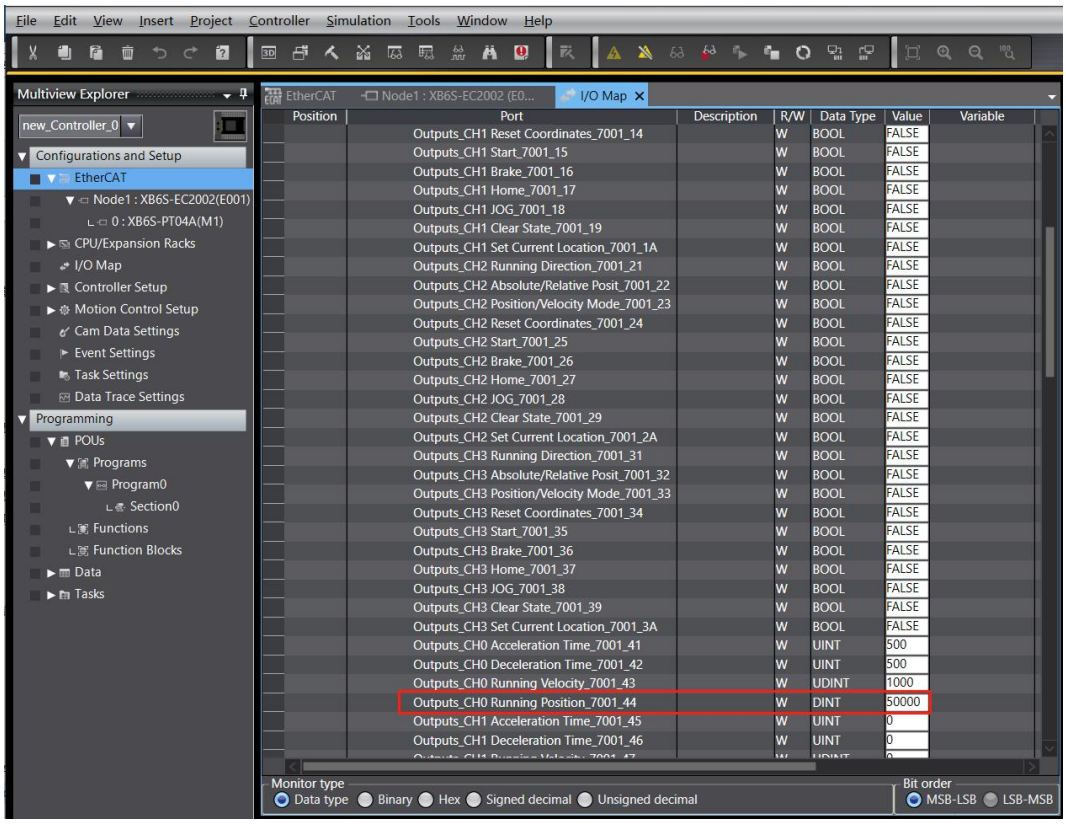
e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

f. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.

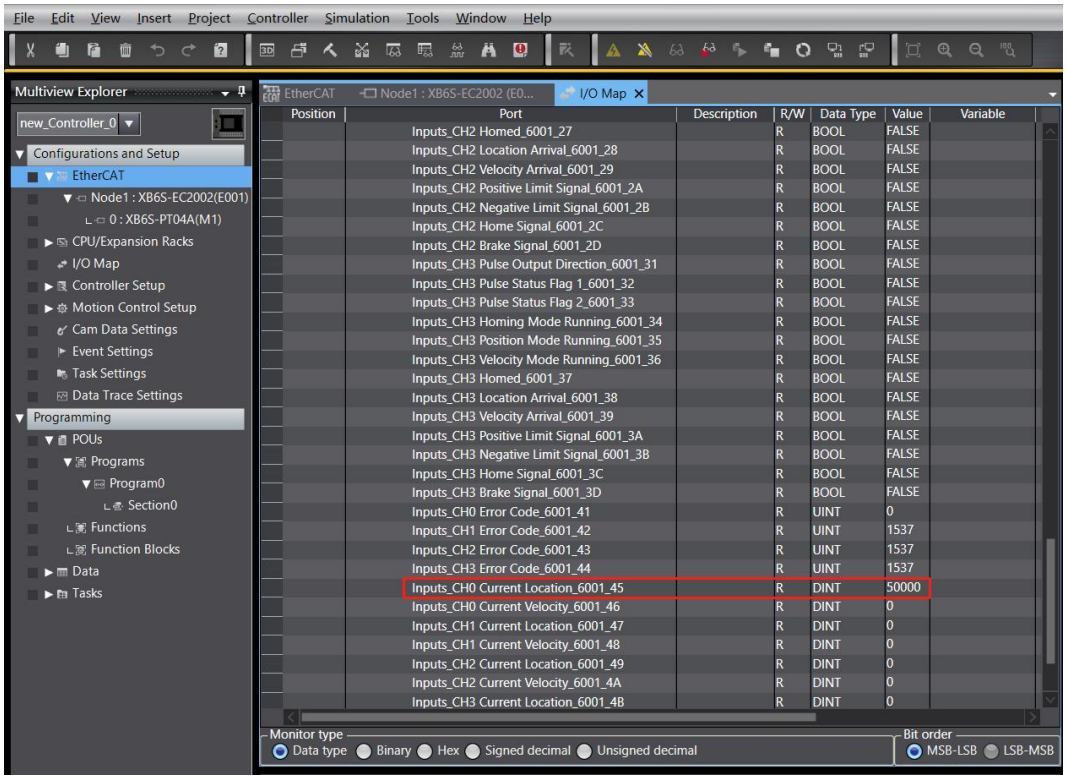




g. During the motion process, change the running step number of channel 0 to 50000 and start motion merging, as shown in the figure below.



h. After the movement is completed, you can see that the current coordinate of channel 0 is 50000, as shown in the figure below.



7.4.3 Application in TIA Portal V17 software environment

1、Preparation

- **Hardware Environment**
  - **Module model XB6S-PT04A**
  - **PROFINET bus coupler module, end cap**

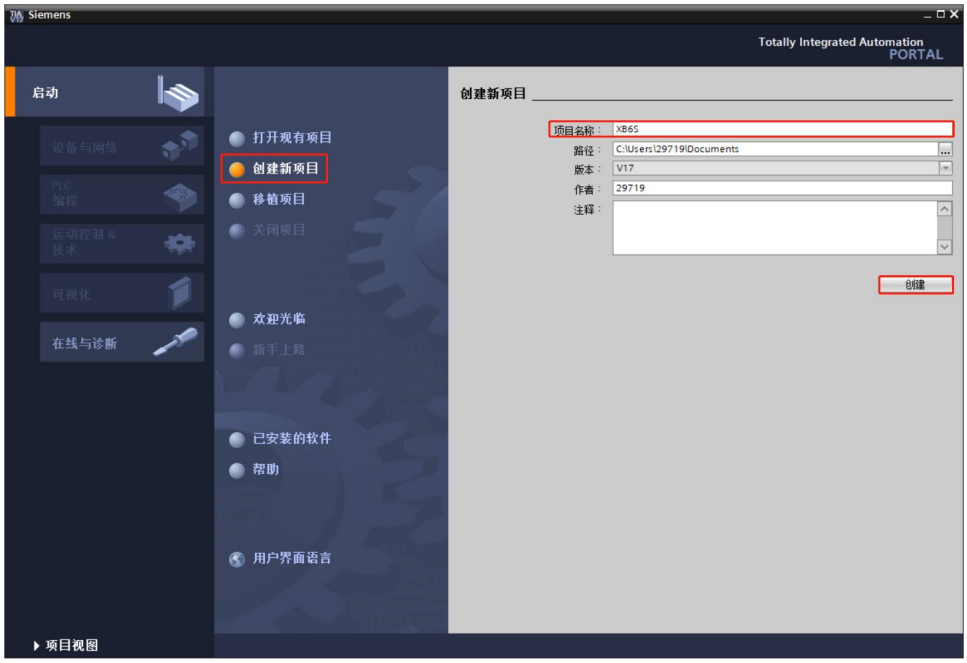
  This description takes the XB6S-PN2002 coupler module as an example
  - **A computer with TIA Portal V17 software pre-installed**
  - **A Siemens PLC. This description takes Siemens S7-1500 CPU 1511-1 PN as an example.**
  - **PROFINET special shielded cable**
  - **Motor drivers, stepper/servo motors and other equipment**
  - **Switching power supply**
  - **Module mounting rails and rail fixings**
  - **Device Profile**

    Configuration file acquisition address:https://www.solidotech.com/cn/resources/configuration-files
- **Hardware configuration and wiring**

  Please follow the "5 Installation and removal""6 Wiring"

2、New Construction

a. Open the TIA Portal V17 software, click "Create New Project", and click the "Create" button after entering all the information, as shown in the figure below.

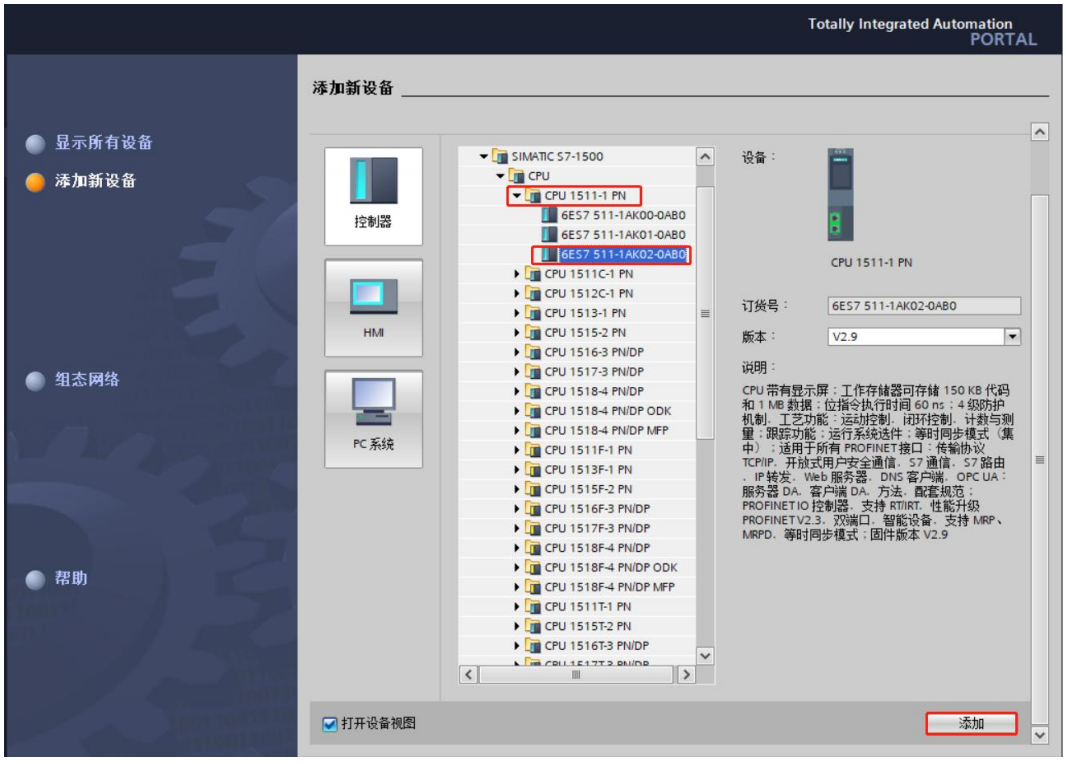


- Project name: Customization, you can keep the default.
- Path: The project path can be kept as default.
- Version: You can keep the default value.
- Author: You can keep the default value.
- Note: Customized, optional.

3、 Add a PLC controller

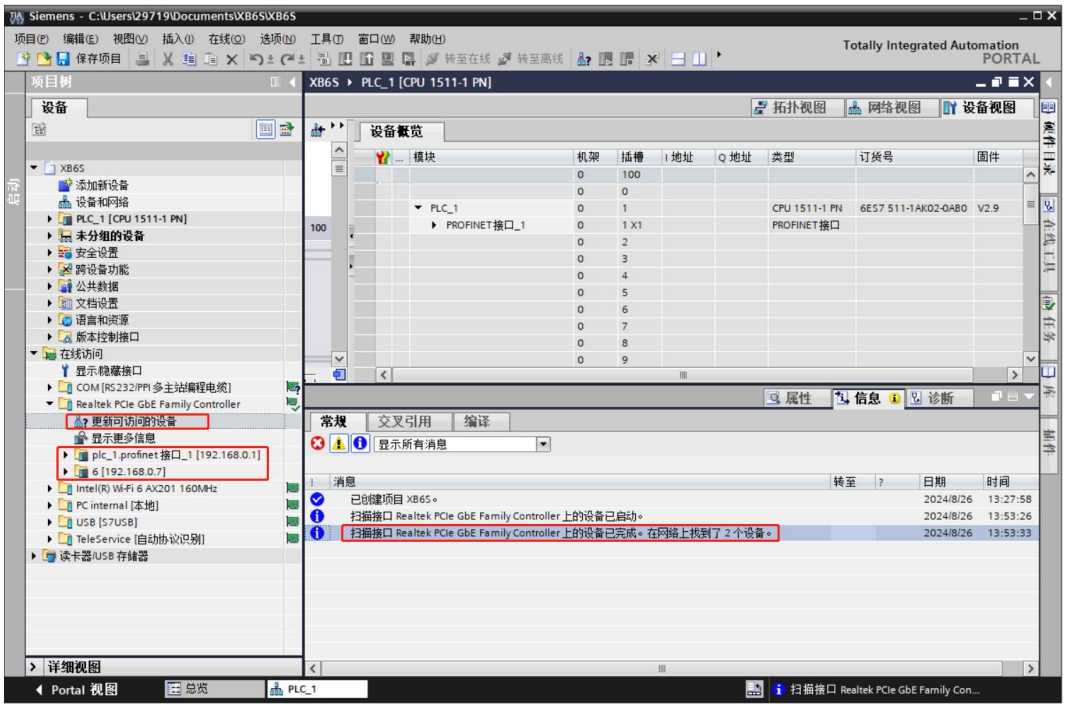
a. Click "Configure Device", as shown in the following figure.

b. Click "Add New Device", select the PLC model currently used, and click "Add", as shown in the figure below. After adding, you can see that the PLC has been added to the device navigation tree.



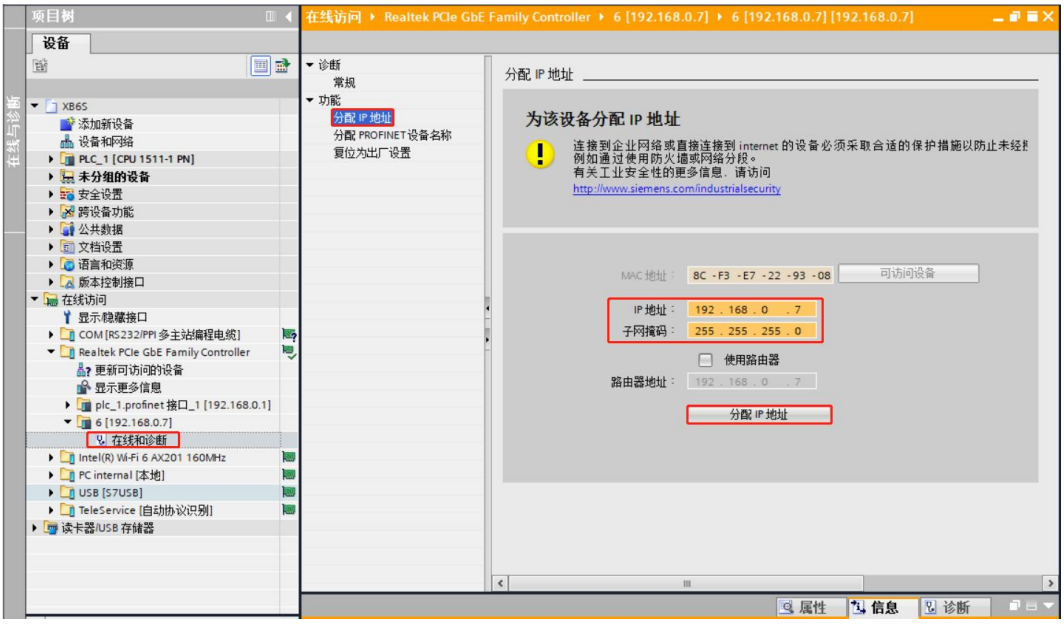
4、Scan for connected devices

a. Click "Online Access -> Update Accessible Devices" in the left navigation tree, as shown in the figure below. After the update is complete, the connected slave devices are displayed, as shown in the figure below.

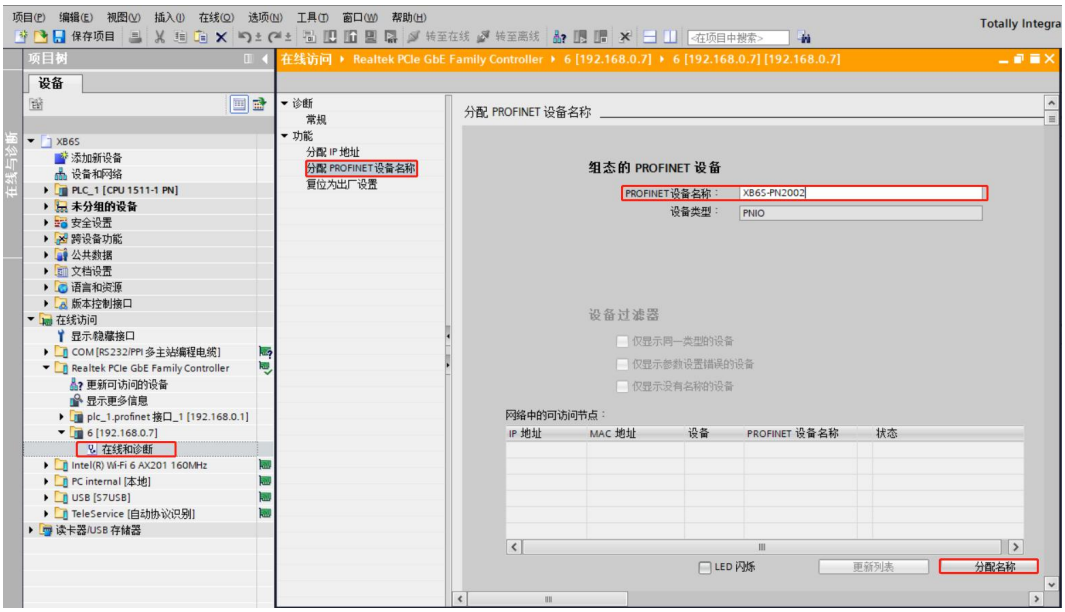


The computer's IP address must be in the same network segment as the PLC. If not, change the computer's IP address and repeat the above steps.

b. Double-click "Online and Diagnosis" under the slave device in the left navigation tree. In the "Function" menu, you can assign the IP address and device name of the current slave. Click "Assign IP Address", fill in "Subnet Mask" first, then fill in "IP Address", and click "Assign IP Address" at the bottom, as shown in the figure below.

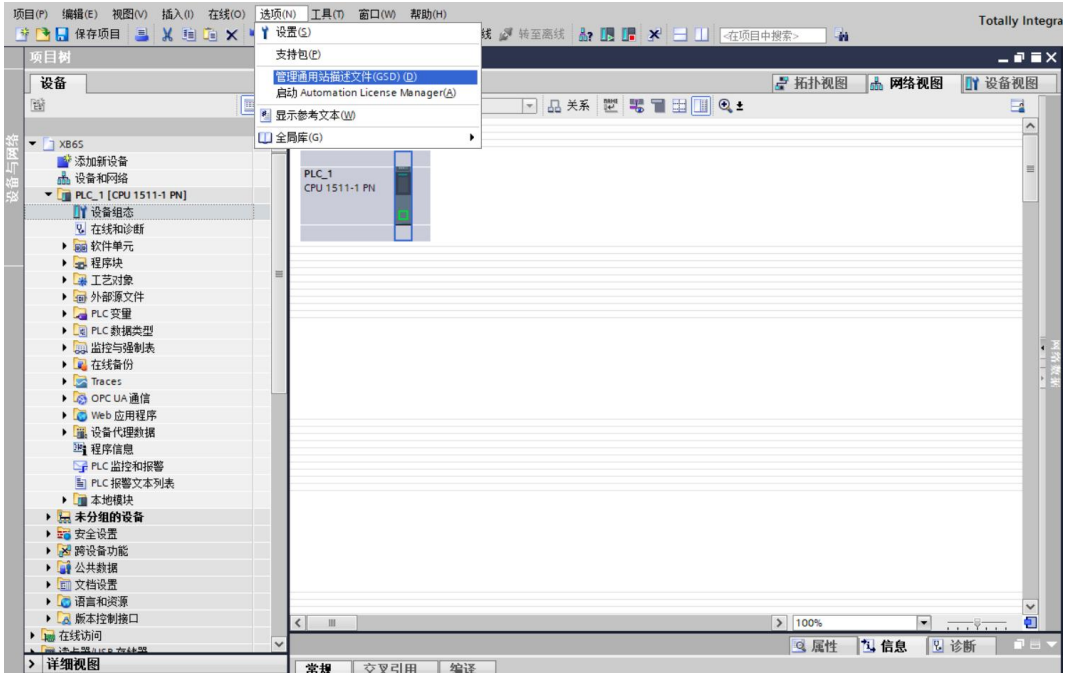


c. Click Assign PROFINET Device Name, enter the PROFINET Device Name, and click Assign Name, as shown in the following figure.

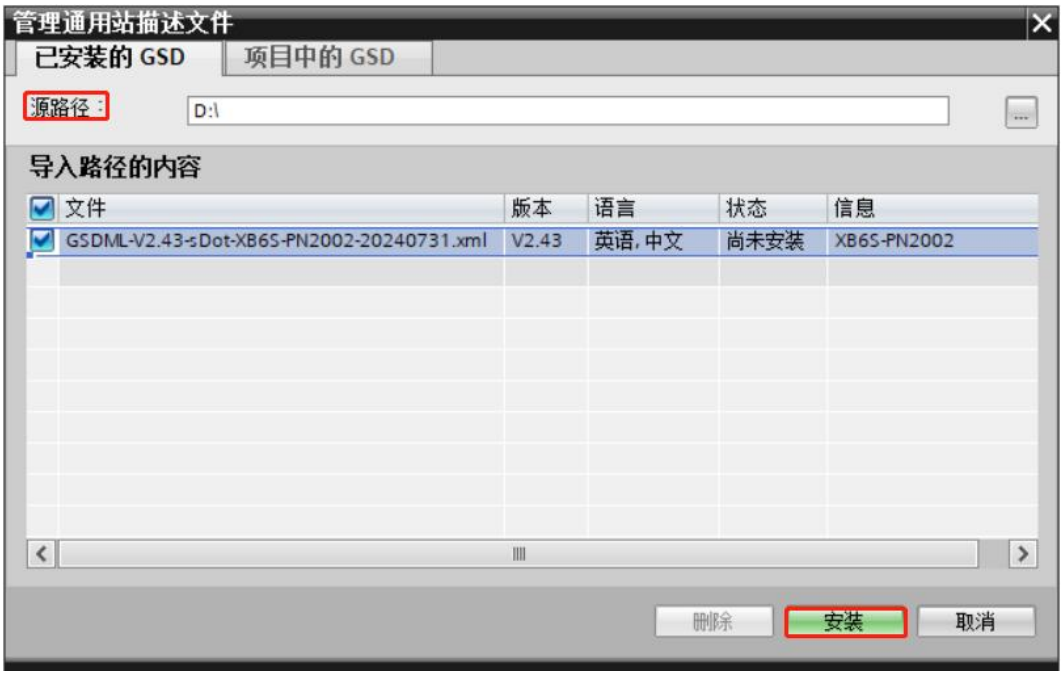


5、Adding a GSD Profile

a. In the menu bar, select "Options -> Manage General Station Description File (GSDML) (D)", as shown in the figure below.



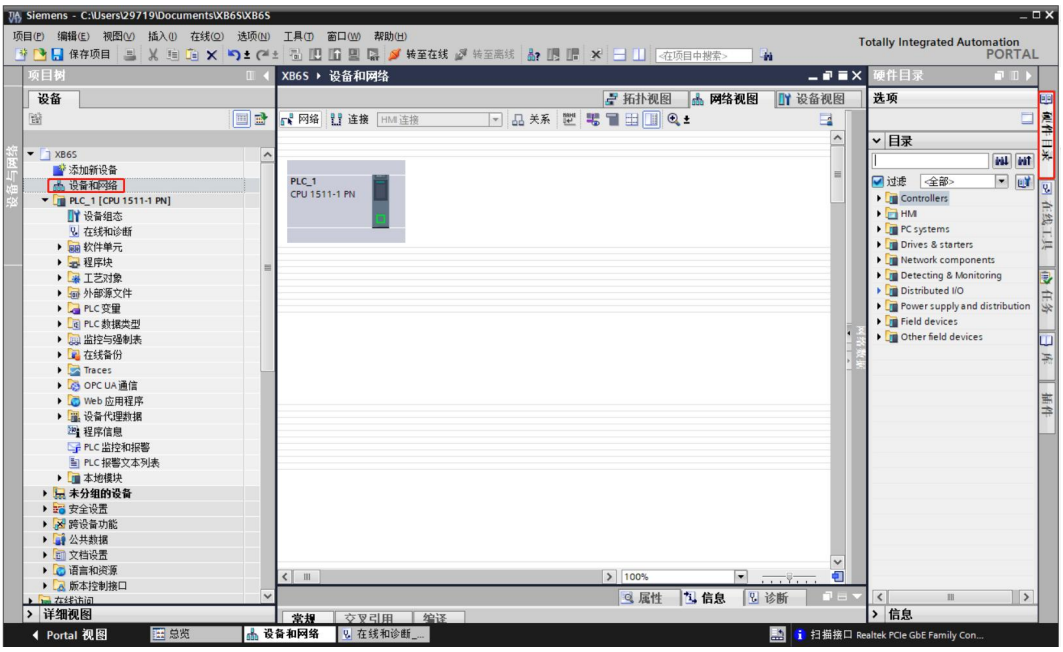
b. Click "Source Path" to select a folder and check whether the status of the GSD file to be added is "Not Installed". If it is not installed, click the "Install" button. If it is already installed, click "Cancel" to skip the installation step., as shown in the figure below.



6、 Adding a slave device

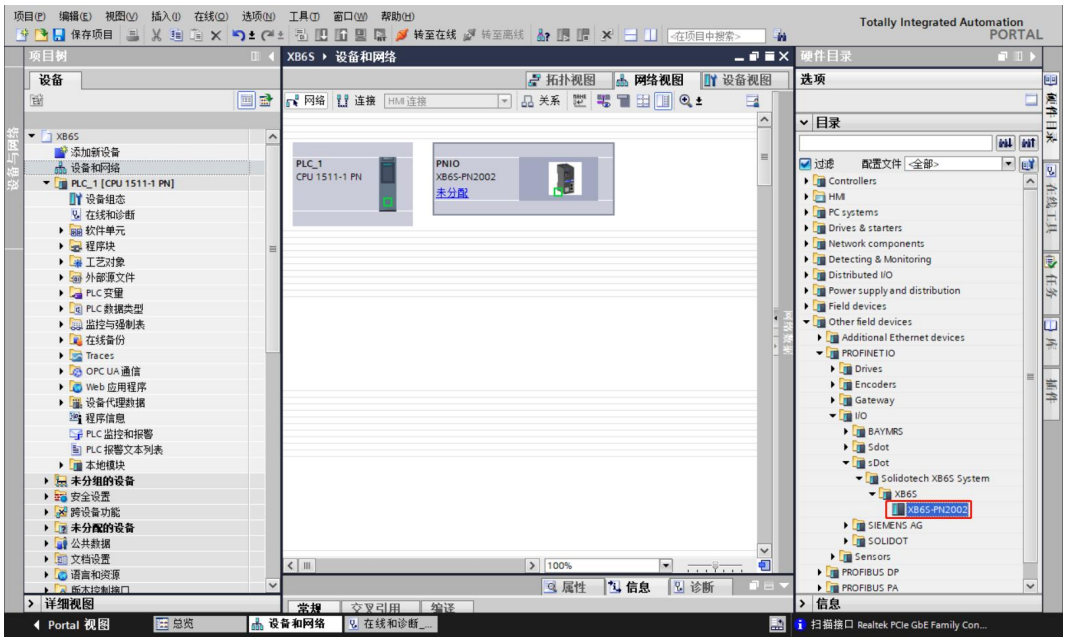
a. Double-click "Devices & Networks" in the left navigation bar.

b. Click the vertical button of "Hardware Catalog" on the right, and the catalog will be displayed as shown in the figure below.

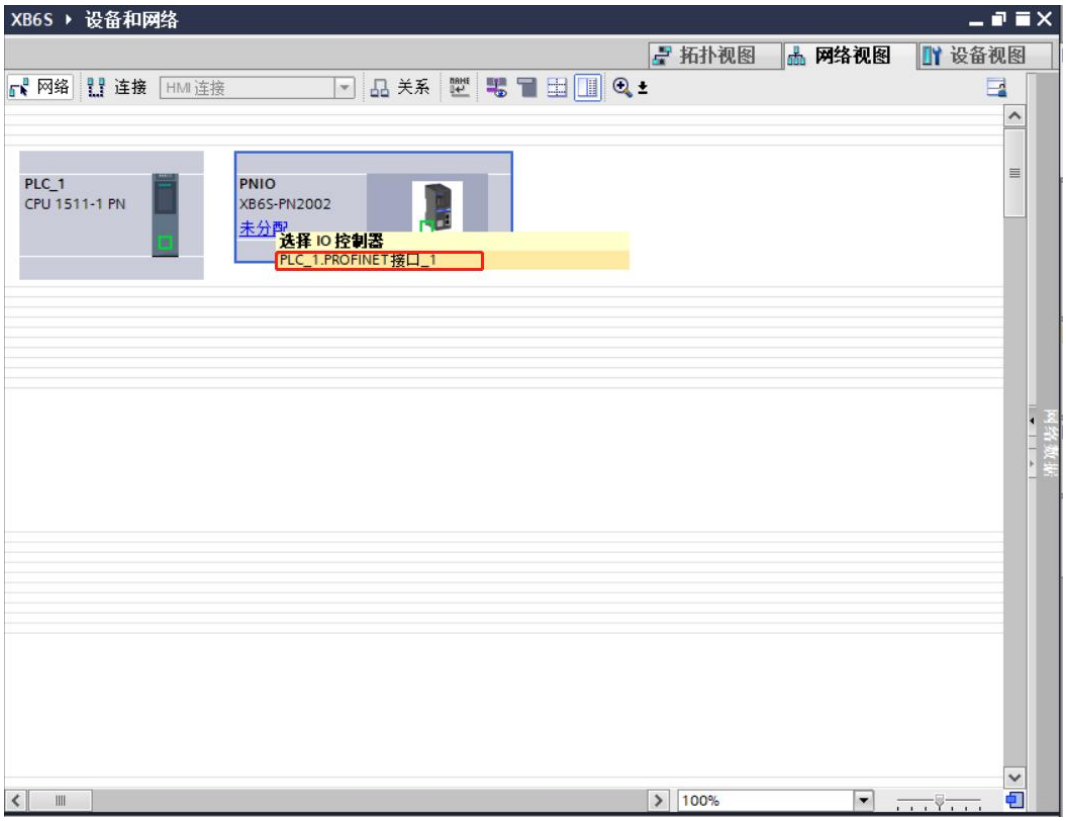


c. Select "Other field devices -> PROFINET IO -> I/O -> sDot -> Solidotech XB6S System -> XB6S -> XB6S-PN2002".

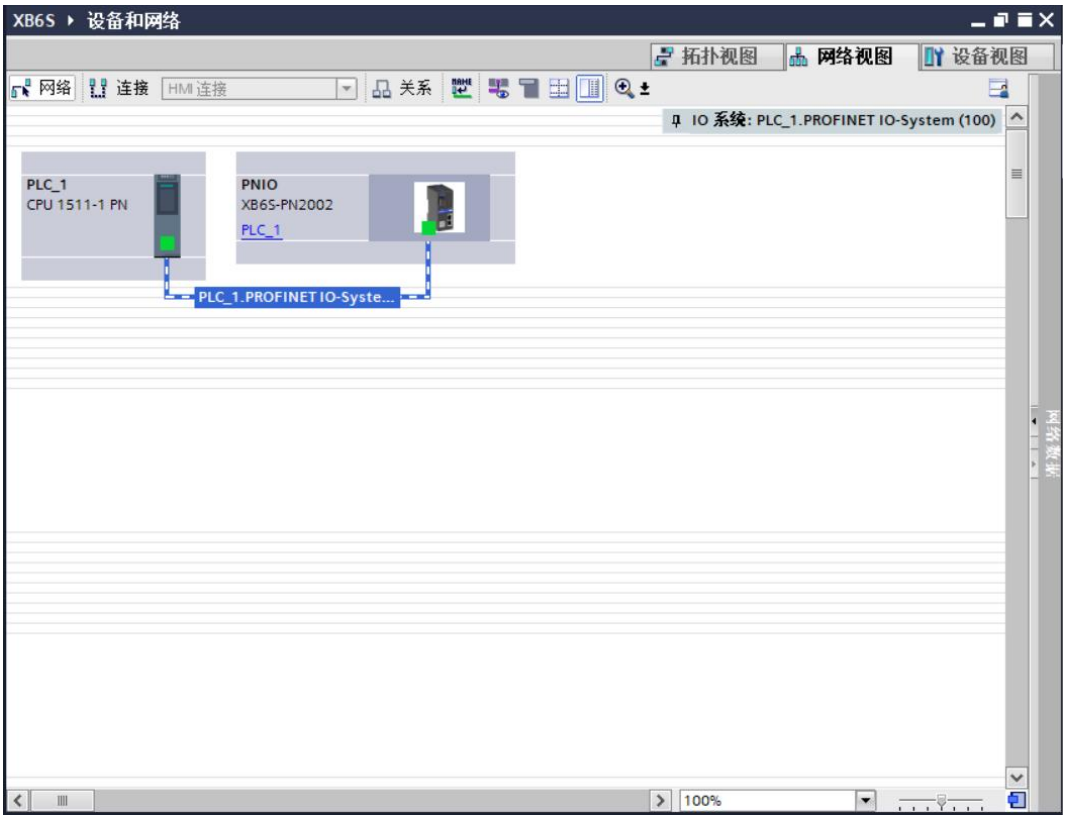
d. Drag or double-click "XB6S-PN2002" to "Network View", as shown in the figure below.



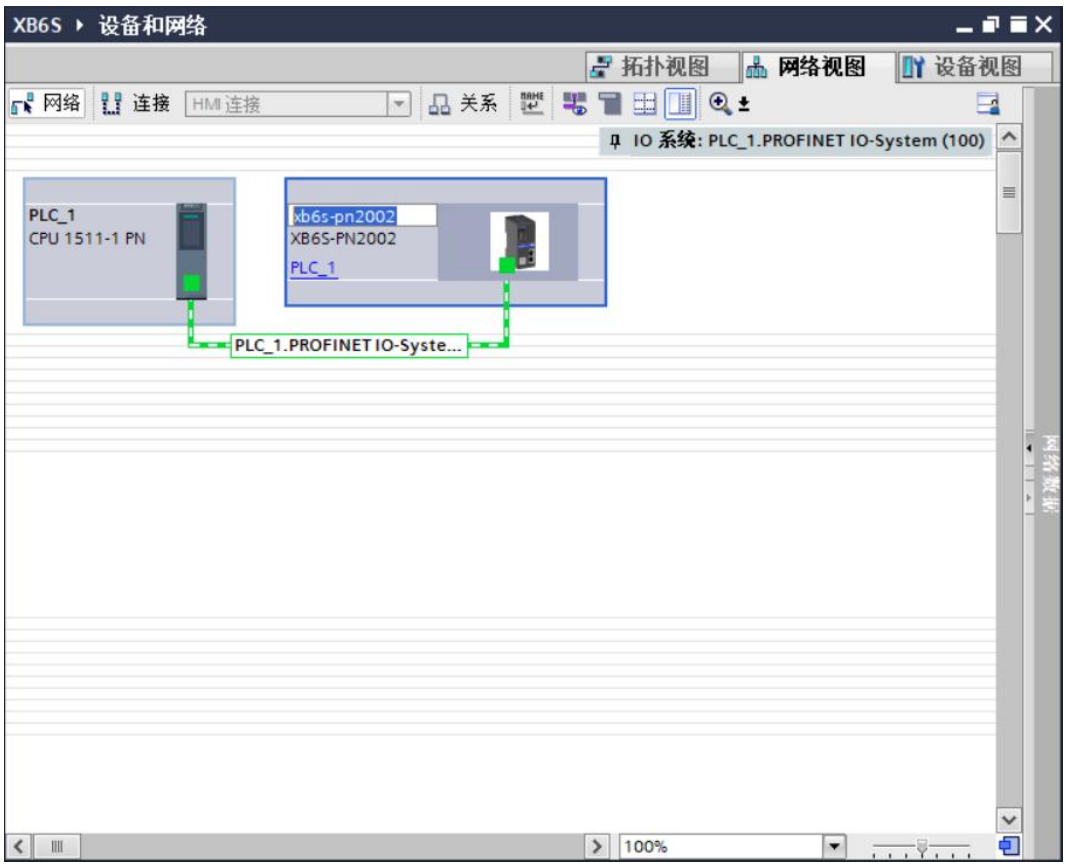
e. Click "Unassigned (blue font)" on the coupler or slave device and select "PLC_1.PROFINET interface_1", as shown in the following figure.



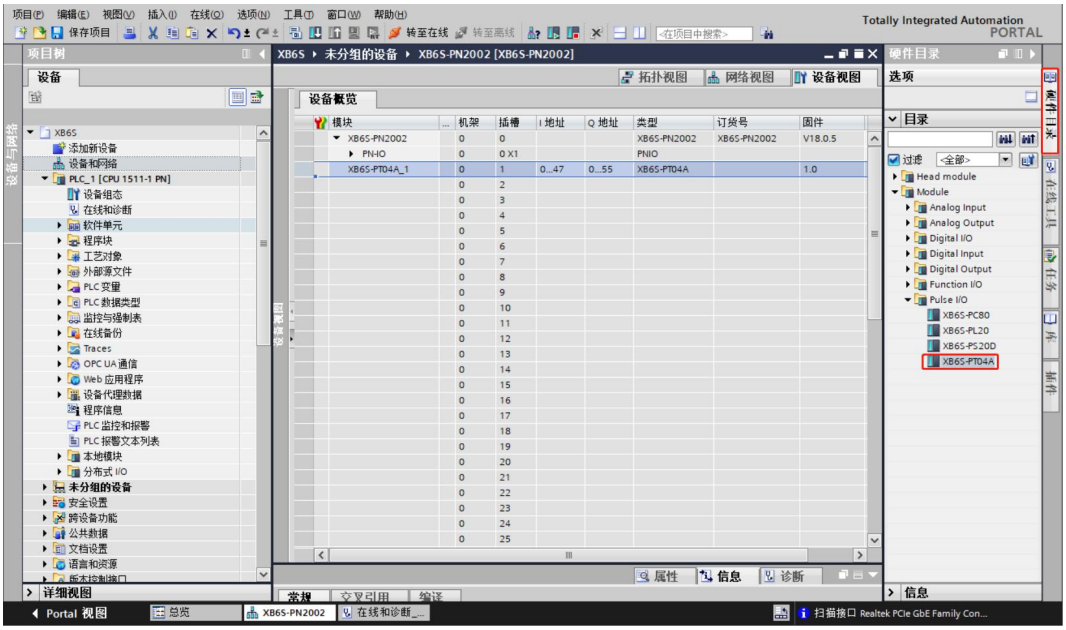
f. After the connection is completed, it will look like the following figure.



g. Click the device name to rename the device, as shown in the following figure.

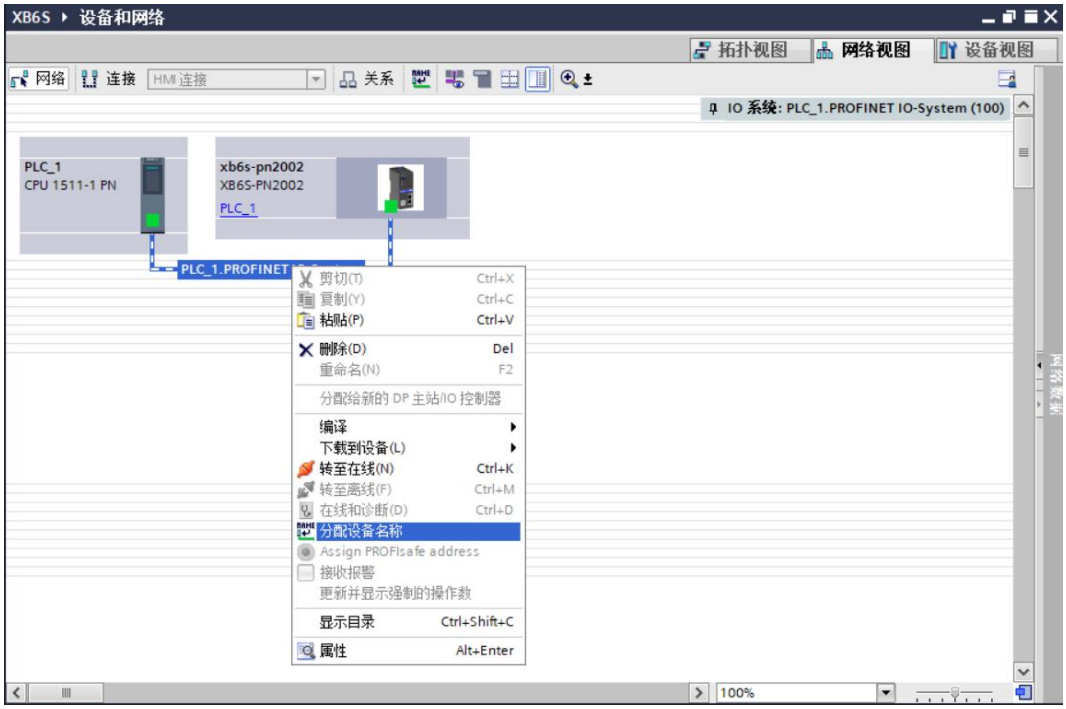


h. Click "Device View" to enter the device overview of the coupler. Under "Hardware Catalog" on the right, add modules in sequence according to the actual topology (the order must be consistent with the actual topology, otherwise communication will not be successful), as shown in the following figure.

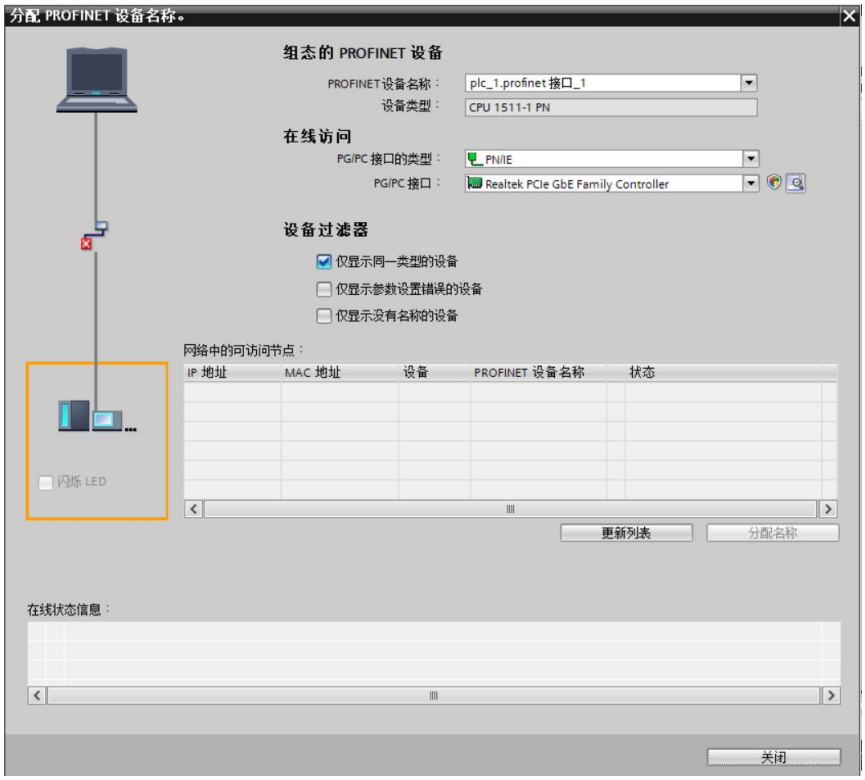


7、Assigning a Device Name

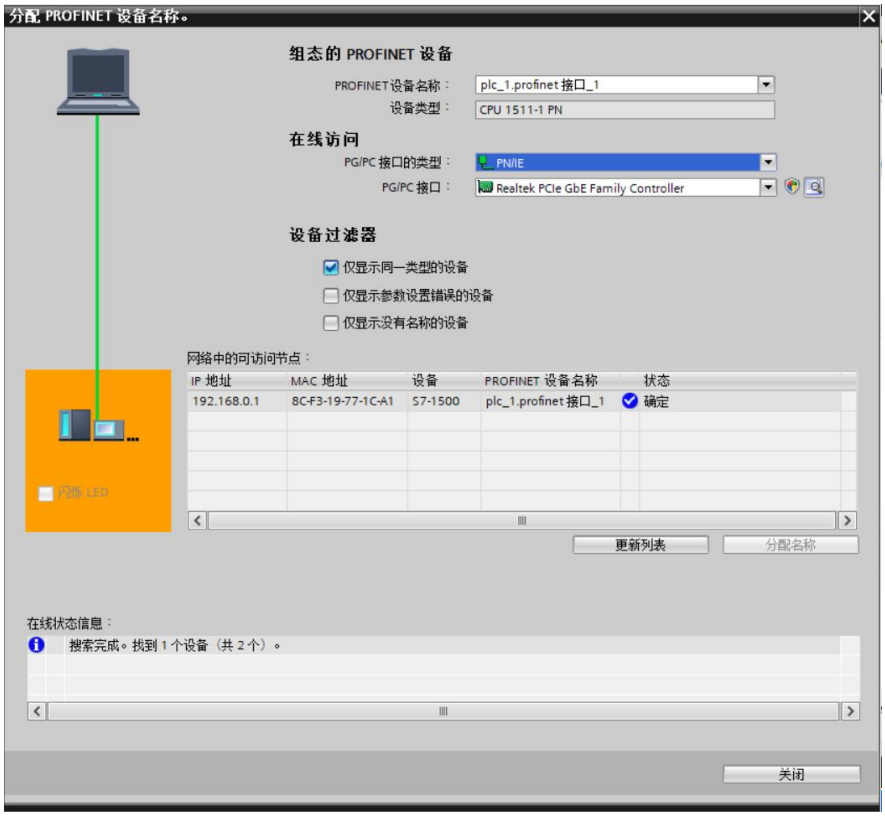
a. Switch to "Network View", right-click the connection line between the PLC and the coupler, and select "Assign Device Name", as shown in the figure below.



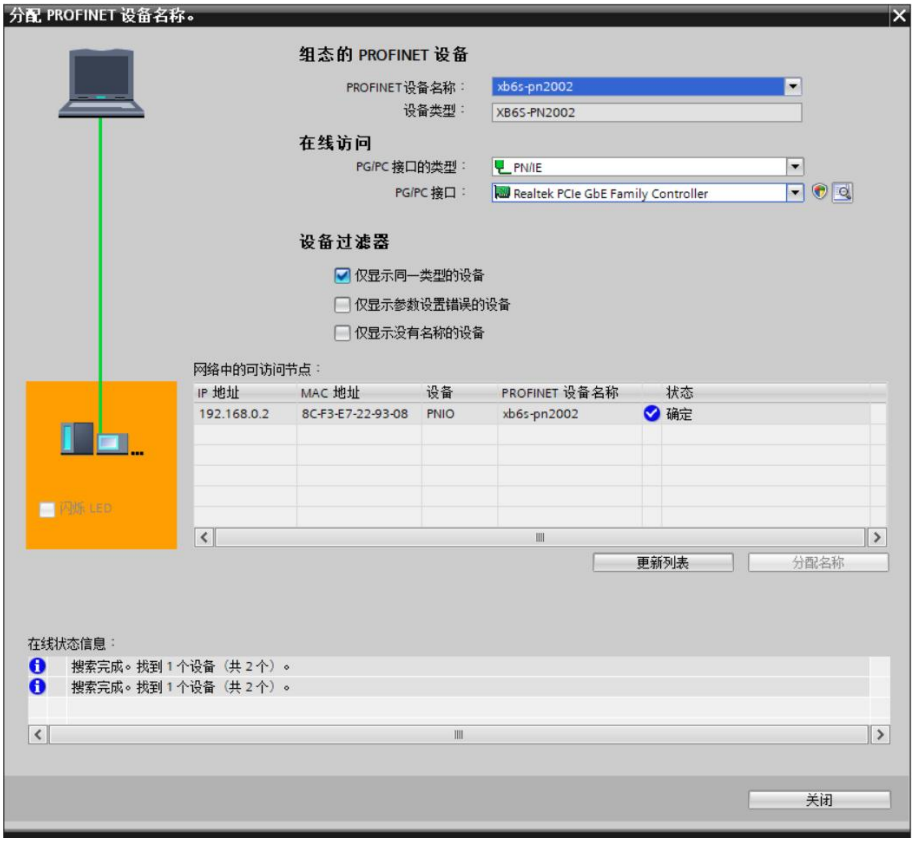
b. The "Assign PROFINET Device Name" window pops up, as shown below.



c. Select PLC in the device name and click "Update List". After the update is complete, check whether the node status in "Accessible nodes in the network" is "Confirmed". If it is not confirmed, select the device and click "Assign Name", as shown in the figure below.



d. Select Coupler for the device name, click Update List, and assign names using the same method after the update, as shown in the figure below.

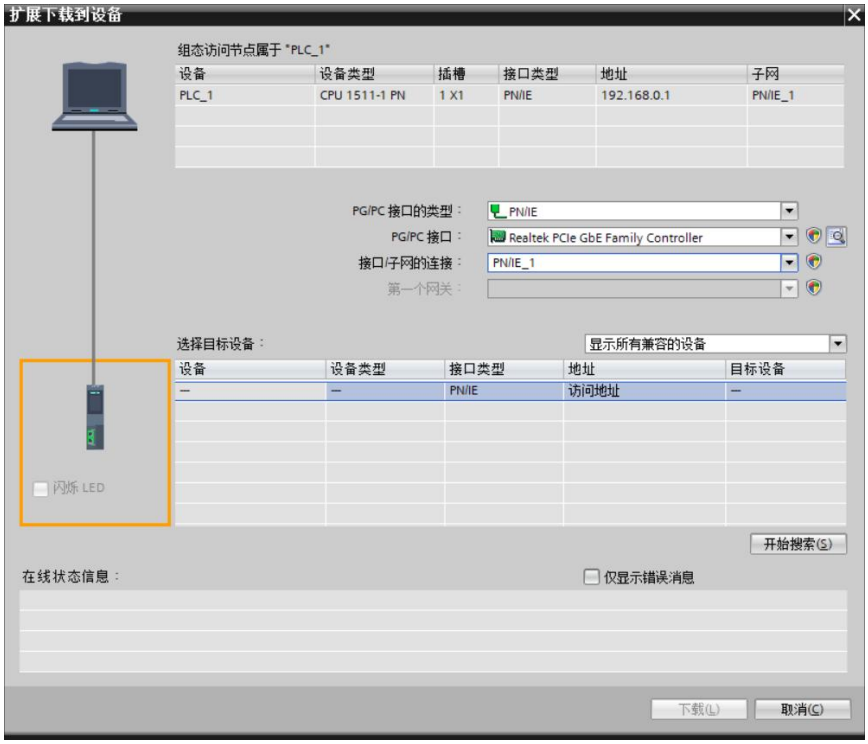


e. Check whether the MAC address on the module silk screen is the same as the MAC address of the assigned device name. Click Close.

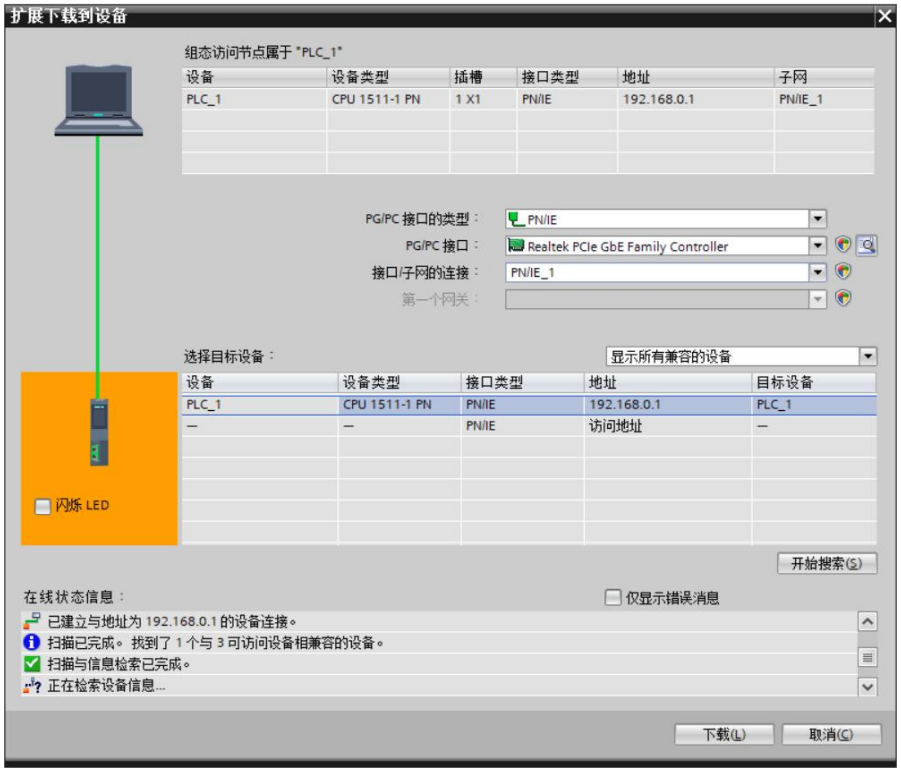
8、Downloading the configuration structure

a. In the network view, select the PLC. First click the Compile button in the menu bar, then click the Download button to download the current configuration to the PLC.

b. In the pop-up "Extended Download to Device" interface, configure as shown below.



c. Click the Start Search button as shown in the following figure.



d. Click "Download" and the download preview window will pop up, as shown in the figure below.

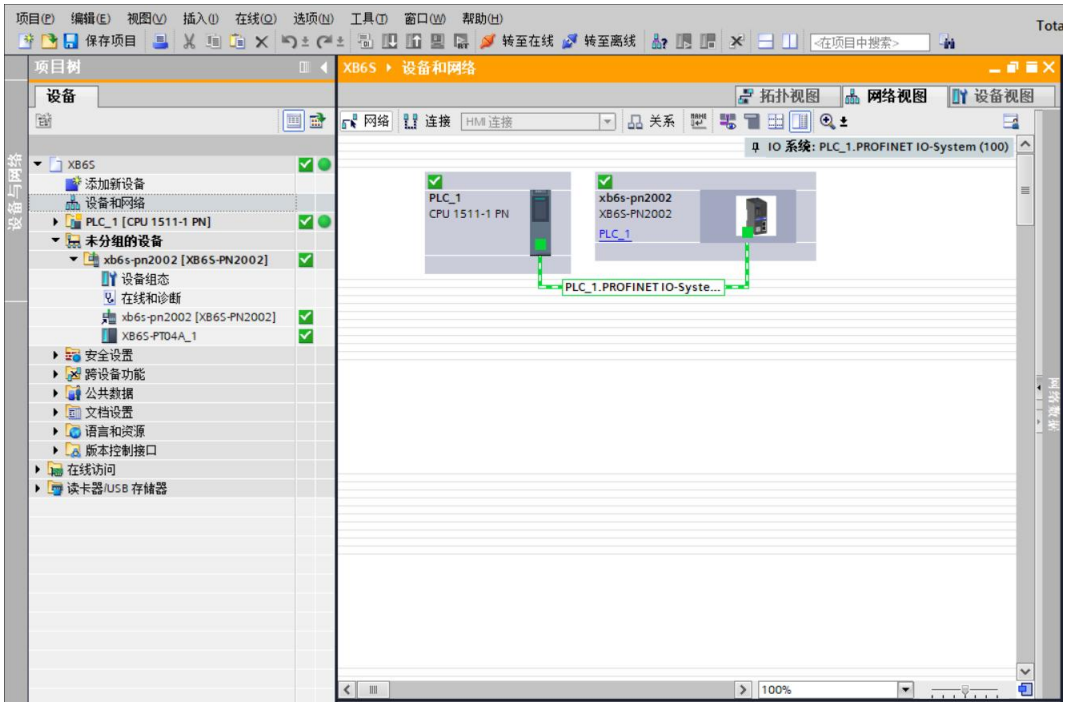
e. Click Mount.

f. Click Finish.

g. Power on the device again.

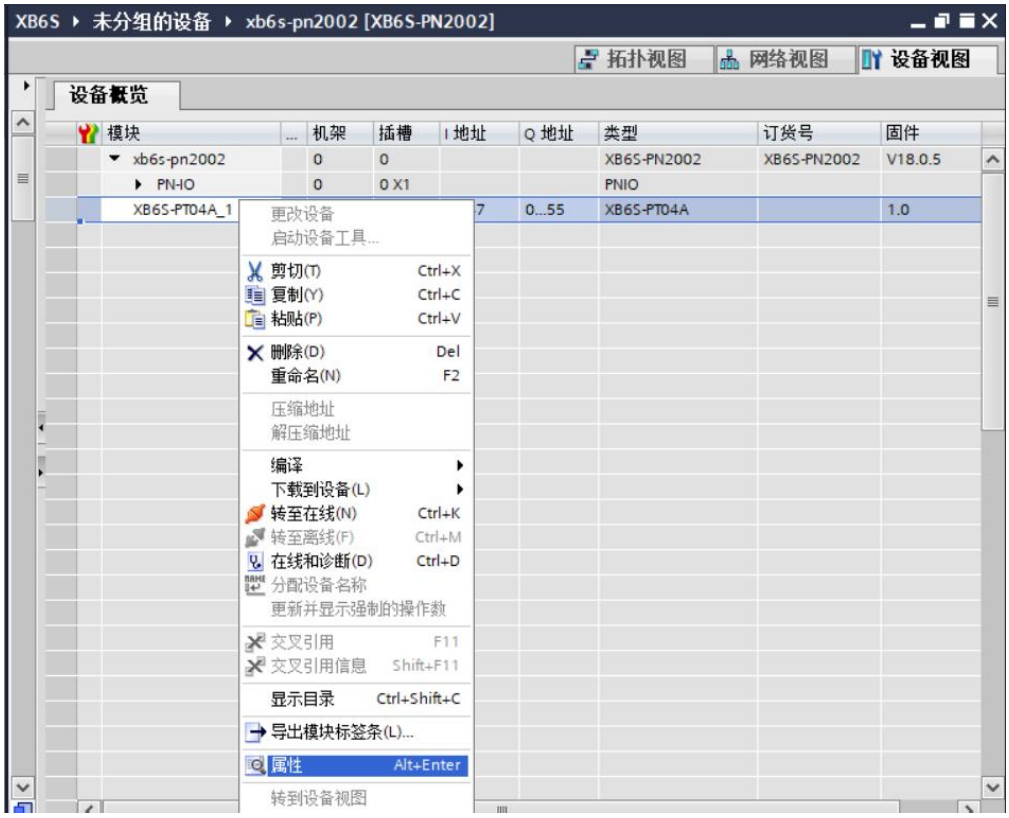
9、Communication connection

a. Click the "Start CPU" button in the menu bar, and then click the "Go Online" button. If the icons are all green, the connection is successful, as shown in the figure below.

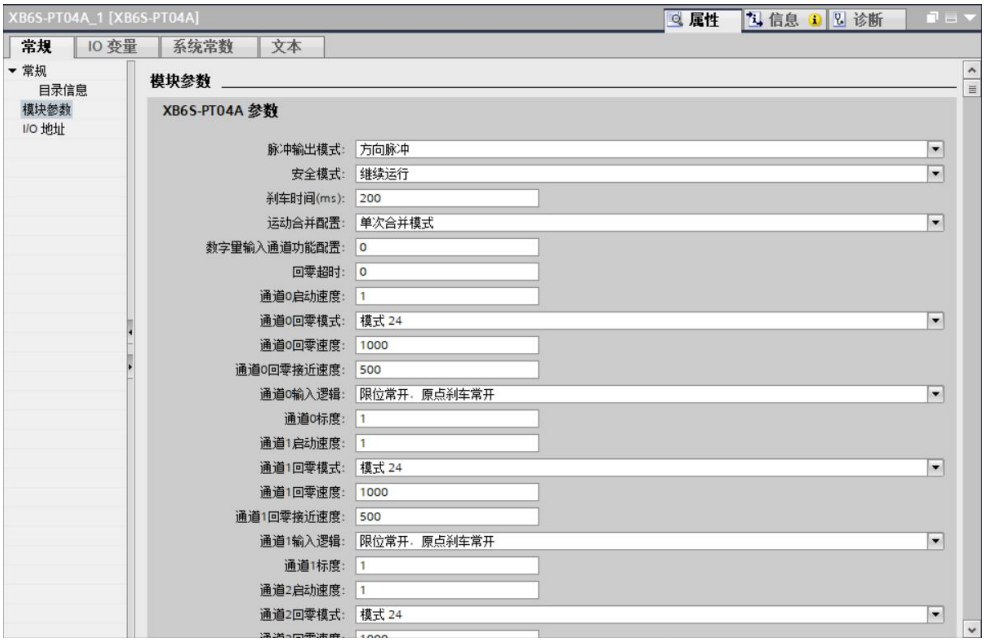


10、 Parameter settings

a. In offline state, open the "Network View", select the coupler module, switch to the device view, right-click the XB6S-PT04A module, and click the "Properties" button to view and set the module parameters, as shown in the figure below.

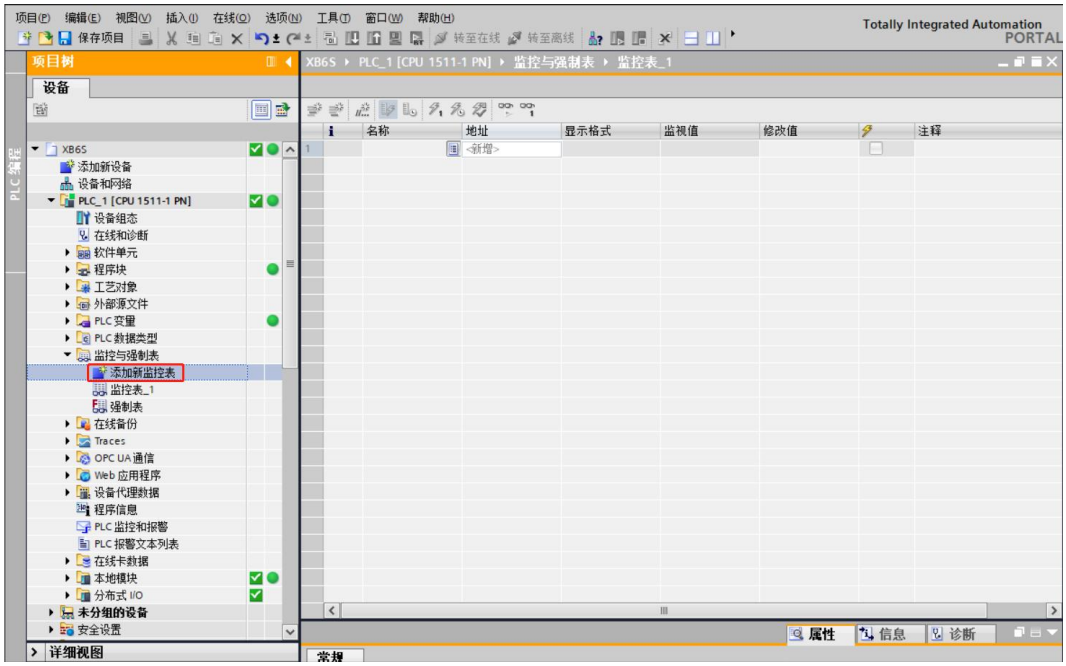


b. On the property page, click "Module Parameters", as shown in the figure below. The parameters can be configured according to actual needs. After the configuration is completed, re-download the program to the PLC, and the PLC and the module need to be powered on again.



11、 Functional Verification

a. Expand the project navigation on the left and select "Monitoring and Enforcement Table", double-click "Add New Monitoring Table", and the system will add a new monitoring table, as shown in the figure below.

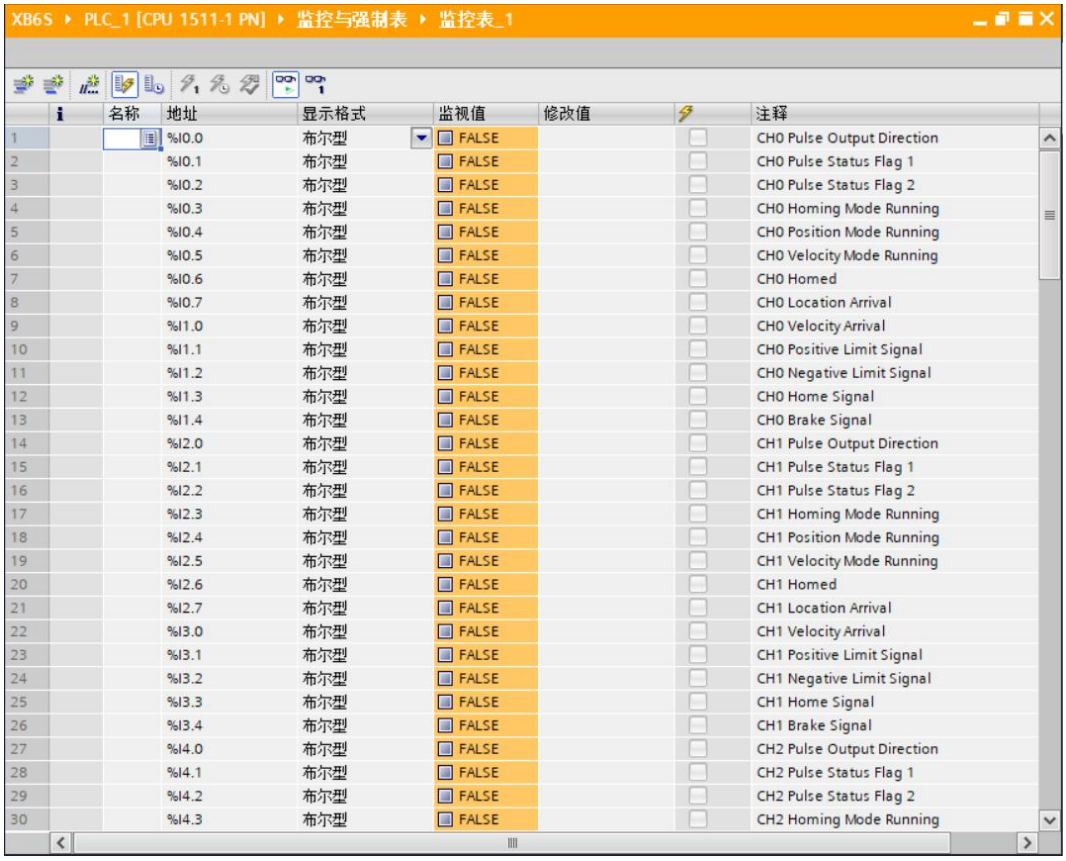


b. Open the "Device View" and check the channel I address (channel address of input signal) and Q address (channel address of output signal) of each module in the device overview.
For example, the "I address" of the XB6S-PT04A module is 0 to 47, and the "Q address" is 0 to 55, as shown in the figure below.

模块	机架	插槽	I 地址	Q 地址	类型	订货号	固件
xb6s-pn2002	0	0			XB6S-PN2002	XB6S-PN2002	V18.0.5
PN-IO	0	0 X1			PNIO		
XB6S-PT04A_1	0	1	0...47	0...55	XB6S-PT04A		1.0
	0	2					
	0	3					
	0	4					
	0	5					
	0	6					
	0	7					
	0	8					
	0	9					
	0	10					
	0	11					
	0	12					

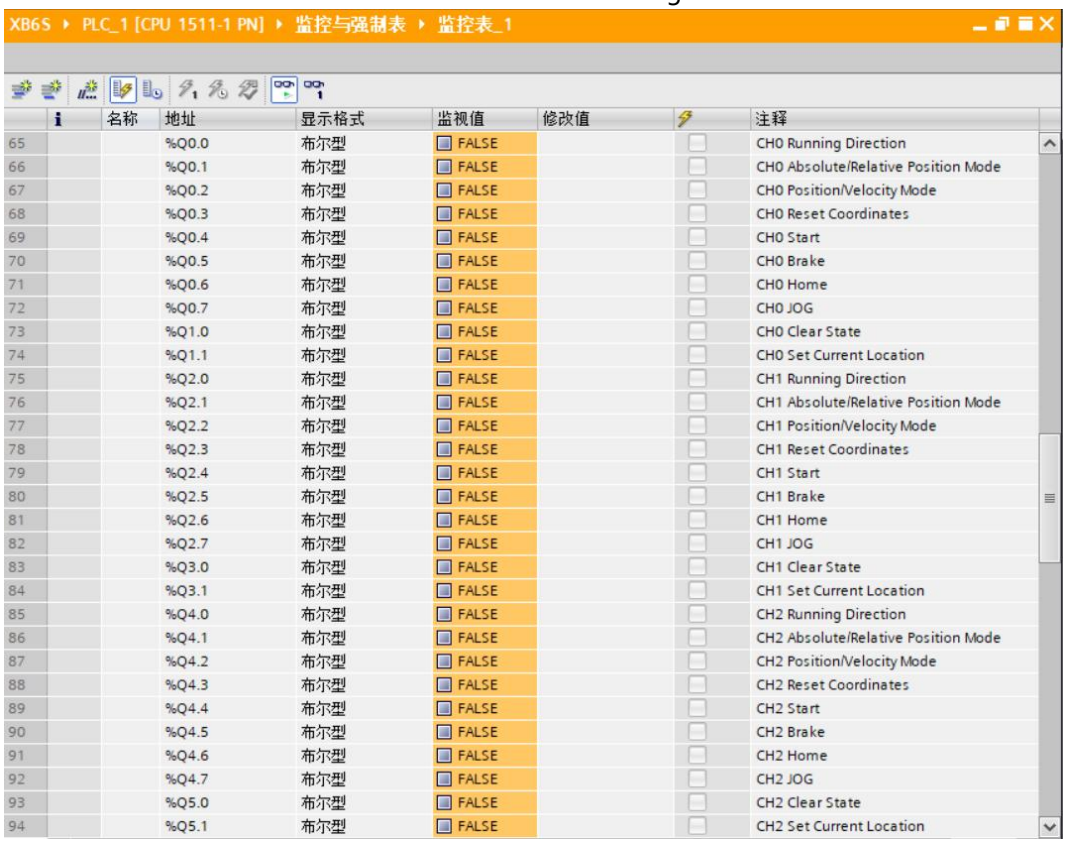
c. Fill in the input and output channel addresses in the address cells of the monitoring table, such as "IB0" to "IB47", "QB0" to "QB55", press the "Enter" key, and click button to monitor the data.

d. The module's upstream data is shown in the monitoring table as shown below.



	名称	地址	显示格式	监视值	修改值	注释
1		%I0.0	布尔型	FALSE		CH0 Pulse Output Direction
2		%I0.1	布尔型	FALSE		CH0 Pulse Status Flag 1
3		%I0.2	布尔型	FALSE		CH0 Pulse Status Flag 2
4		%I0.3	布尔型	FALSE		CH0 Homing Mode Running
5		%I0.4	布尔型	FALSE		CH0 Position Mode Running
6		%I0.5	布尔型	FALSE		CH0 Velocity Mode Running
7		%I0.6	布尔型	FALSE		CH0 Homed
8		%I0.7	布尔型	FALSE		CH0 Location Arrival
9		%I1.0	布尔型	FALSE		CH0 Velocity Arrival
10		%I1.1	布尔型	FALSE		CH0 Positive Limit Signal
11		%I1.2	布尔型	FALSE		CH0 Negative Limit Signal
12		%I1.3	布尔型	FALSE		CH0 Home Signal
13		%I1.4	布尔型	FALSE		CH0 Brake Signal
14		%I2.0	布尔型	FALSE		CH1 Pulse Output Direction
15		%I2.1	布尔型	FALSE		CH1 Pulse Status Flag 1
16		%I2.2	布尔型	FALSE		CH1 Pulse Status Flag 2
17		%I2.3	布尔型	FALSE		CH1 Homing Mode Running
18		%I2.4	布尔型	FALSE		CH1 Position Mode Running
19		%I2.5	布尔型	FALSE		CH1 Velocity Mode Running
20		%I2.6	布尔型	FALSE		CH1 Homed
21		%I2.7	布尔型	FALSE		CH1 Location Arrival
22		%I3.0	布尔型	FALSE		CH1 Velocity Arrival
23		%I3.1	布尔型	FALSE		CH1 Positive Limit Signal
24		%I3.2	布尔型	FALSE		CH1 Negative Limit Signal
25		%I3.3	布尔型	FALSE		CH1 Home Signal
26		%I3.4	布尔型	FALSE		CH1 Brake Signal
27		%I4.0	布尔型	FALSE		CH2 Pulse Output Direction
28		%I4.1	布尔型	FALSE		CH2 Pulse Status Flag 1
29		%I4.2	布尔型	FALSE		CH2 Pulse Status Flag 2
30		%I4.3	布尔型	FALSE		CH2 Homing Mode Running

e. The module's downstream data is shown in the monitoring table as shown below.

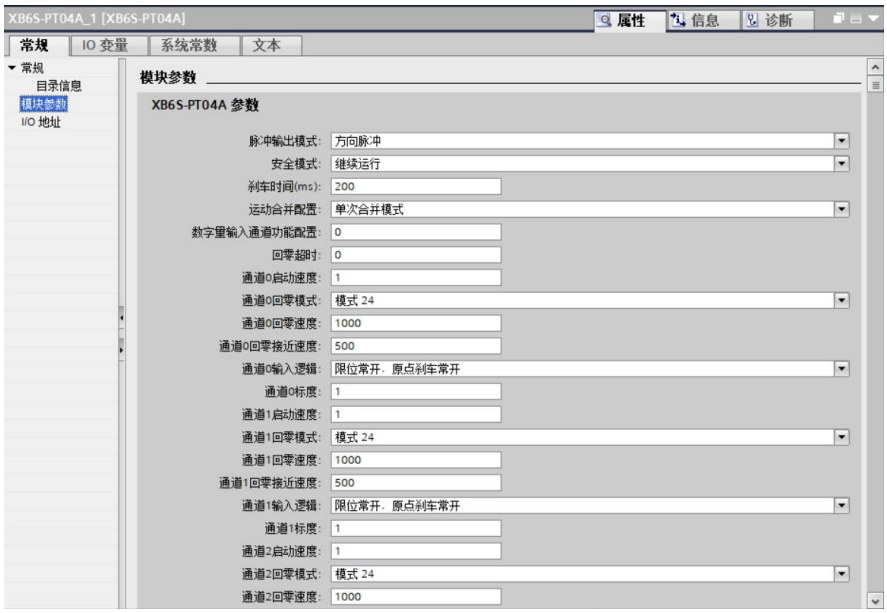


	名称	地址	显示格式	监视值	修改值	注释
65		%Q0.0	布尔型	FALSE		CH0 Running Direction
66		%Q0.1	布尔型	FALSE		CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE		CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE		CH0 Reset Coordinates
69		%Q0.4	布尔型	FALSE		CH0 Start
70		%Q0.5	布尔型	FALSE		CH0 Brake
71		%Q0.6	布尔型	FALSE		CH0 Home
72		%Q0.7	布尔型	FALSE		CH0 JOG
73		%Q1.0	布尔型	FALSE		CH0 Clear State
74		%Q1.1	布尔型	FALSE		CH0 Set Current Location
75		%Q2.0	布尔型	FALSE		CH1 Running Direction
76		%Q2.1	布尔型	FALSE		CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE		CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE		CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE		CH1 Start
80		%Q2.5	布尔型	FALSE		CH1 Brake
81		%Q2.6	布尔型	FALSE		CH1 Home
82		%Q2.7	布尔型	FALSE		CH1 JOG
83		%Q3.0	布尔型	FALSE		CH1 Clear State
84		%Q3.1	布尔型	FALSE		CH1 Set Current Location
85		%Q4.0	布尔型	FALSE		CH2 Running Direction
86		%Q4.1	布尔型	FALSE		CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE		CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE		CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE		CH2 Start
90		%Q4.5	布尔型	FALSE		CH2 Brake
91		%Q4.6	布尔型	FALSE		CH2 Home
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State
94		%Q5.1	布尔型	FALSE		CH2 Set Current Location

Module Functionality Examples

◆ **Channel 0 runs 50,000 pulses in the forward direction at a speed of 100,000 Hz**

a. Configure the configuration parameters as shown in the following figure.



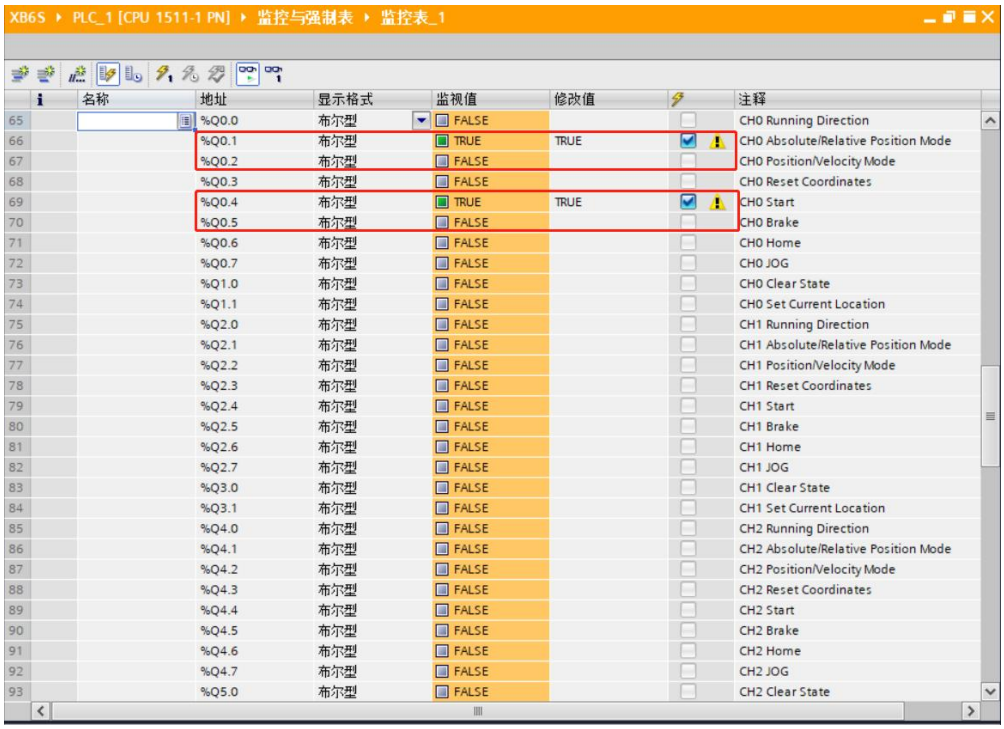
After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

b. Set channel 0 to relative position mode;

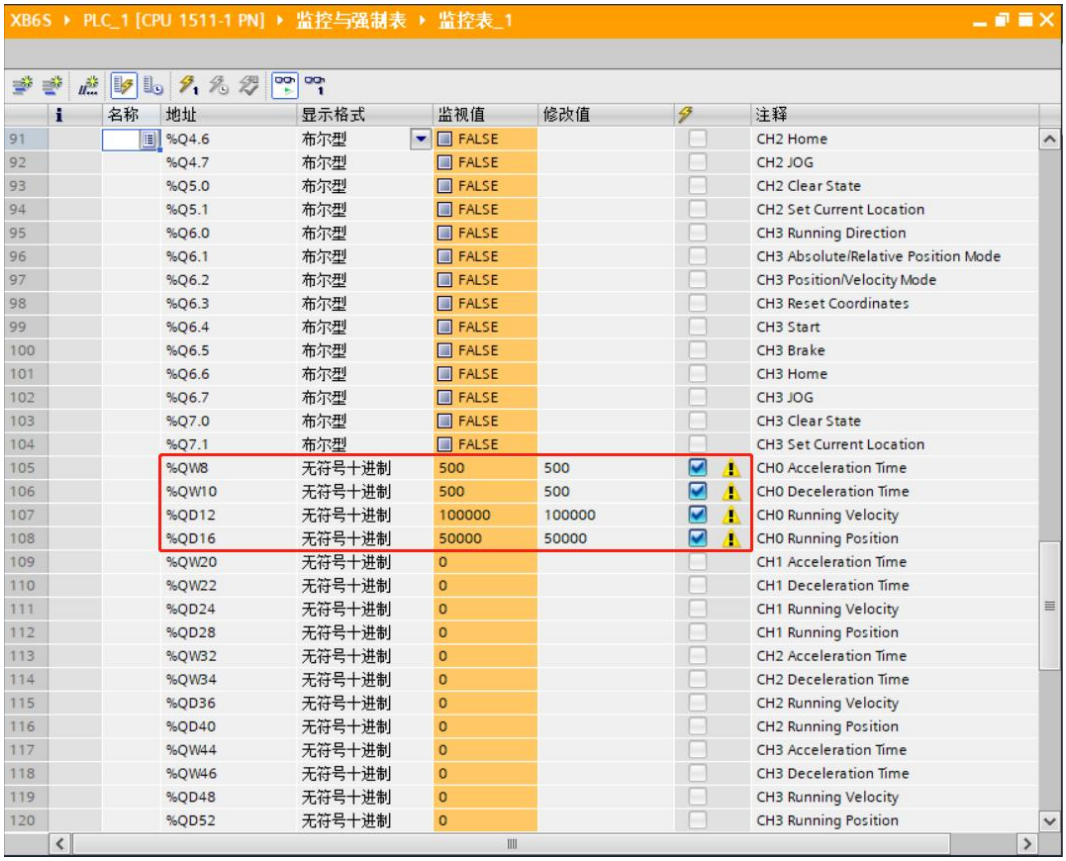
c. Configure channel 0 to run with 50000 steps, 100000 Hz running speed, and 500 acceleration/deceleration time.

d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1, as shown in the figure below.

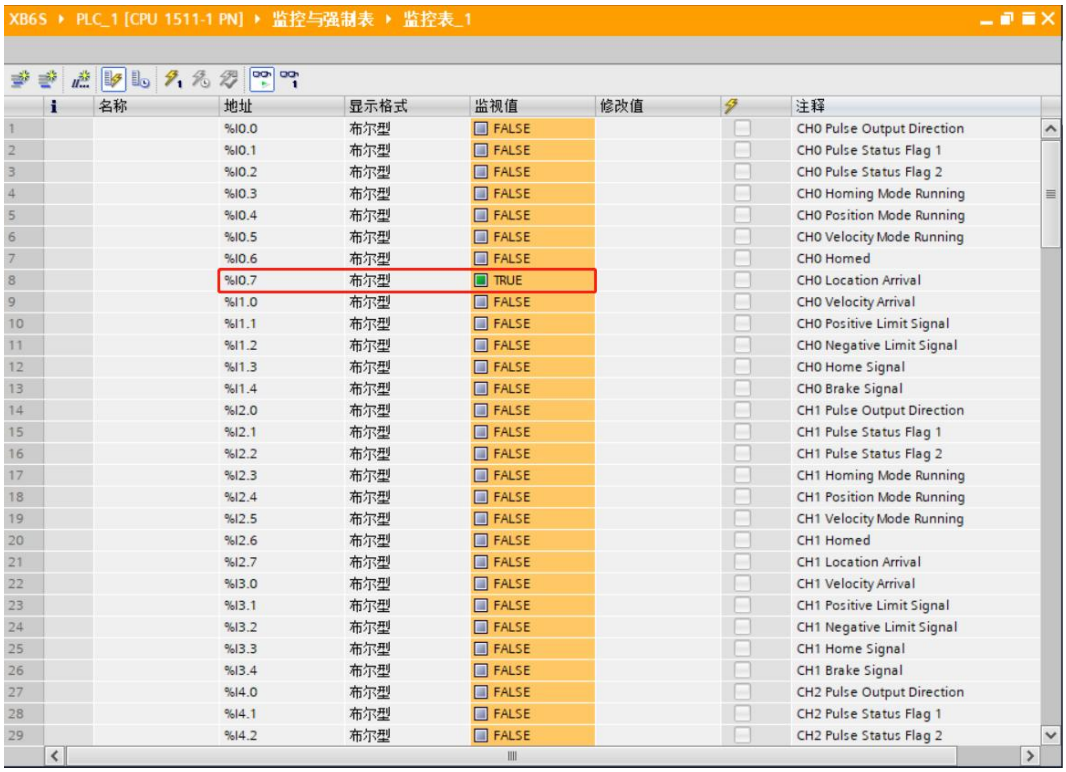


	名称	地址	显示格式	监视值	修改值	注释
65		%Q0.0	布尔型	FALSE		CH0 Running Direction
66		%Q0.1	布尔型	TRUE	TRUE	CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE		CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE		CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE	CH0 Start
70		%Q0.5	布尔型	FALSE		CH0 Brake
71		%Q0.6	布尔型	FALSE		CH0 Home
72		%Q0.7	布尔型	FALSE		CH0 JOG
73		%Q1.0	布尔型	FALSE		CH0 Clear State
74		%Q1.1	布尔型	FALSE		CH0 Set Current Location
75		%Q2.0	布尔型	FALSE		CH1 Running Direction
76		%Q2.1	布尔型	FALSE		CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE		CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE		CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE		CH1 Start
80		%Q2.5	布尔型	FALSE		CH1 Brake
81		%Q2.6	布尔型	FALSE		CH1 Home
82		%Q2.7	布尔型	FALSE		CH1 JOG
83		%Q3.0	布尔型	FALSE		CH1 Clear State
84		%Q3.1	布尔型	FALSE		CH1 Set Current Location
85		%Q4.0	布尔型	FALSE		CH2 Running Direction
86		%Q4.1	布尔型	FALSE		CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE		CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE		CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE		CH2 Start
90		%Q4.5	布尔型	FALSE		CH2 Brake
91		%Q4.6	布尔型	FALSE		CH2 Home
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State



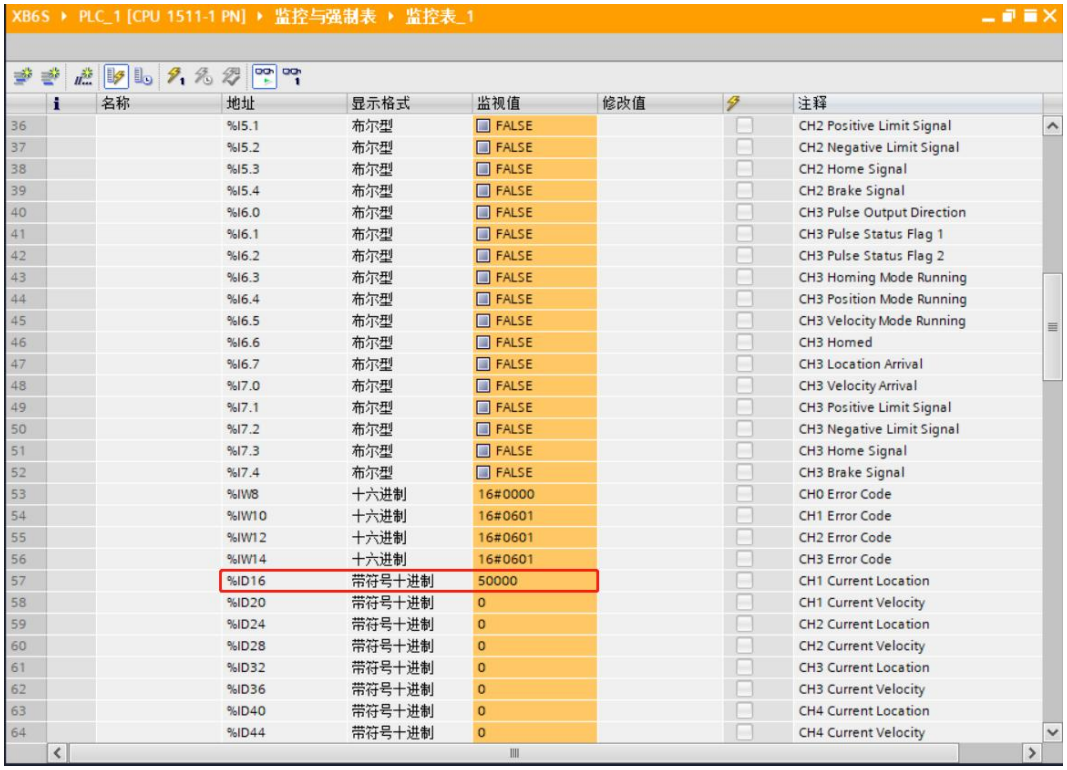
	名称	地址	显示格式	监视值	修改值		注释
91		%Q4.6	布尔型	FALSE			CH2 Home
92		%Q4.7	布尔型	FALSE			CH2 JOG
93		%Q5.0	布尔型	FALSE			CH2 Clear State
94		%Q5.1	布尔型	FALSE			CH2 Set Current Location
95		%Q6.0	布尔型	FALSE			CH3 Running Direction
96		%Q6.1	布尔型	FALSE			CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE			CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE			CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE			CH3 Start
100		%Q6.5	布尔型	FALSE			CH3 Brake
101		%Q6.6	布尔型	FALSE			CH3 Home
102		%Q6.7	布尔型	FALSE			CH3 JOG
103		%Q7.0	布尔型	FALSE			CH3 Clear State
104		%Q7.1	布尔型	FALSE			CH3 Set Current Location
105		%QW8	无符号十进制	500	500	☑	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	☑	CH0 Deceleration Time
107		%QD12	无符号十进制	100000	100000	☑	CH0 Running Velocity
108		%QD16	无符号十进制	50000	50000	☑	CH0 Running Position
109		%QW20	无符号十进制	0			CH1 Acceleration Time
110		%QW22	无符号十进制	0			CH1 Deceleration Time
111		%QD24	无符号十进制	0			CH1 Running Velocity
112		%QD28	无符号十进制	0			CH1 Running Position
113		%QW32	无符号十进制	0			CH2 Acceleration Time
114		%QW34	无符号十进制	0			CH2 Deceleration Time
115		%QD36	无符号十进制	0			CH2 Running Velocity
116		%QD40	无符号十进制	0			CH2 Running Position
117		%QW44	无符号十进制	0			CH3 Acceleration Time
118		%QW46	无符号十进制	0			CH3 Deceleration Time
119		%QD48	无符号十进制	0			CH3 Running Velocity
120		%QD52	无符号十进制	0			CH3 Running Position

f. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值		注释
1		%I0.0	布尔型	FALSE			CH0 Pulse Output Direction
2		%I0.1	布尔型	FALSE			CH0 Pulse Status Flag 1
3		%I0.2	布尔型	FALSE			CH0 Pulse Status Flag 2
4		%I0.3	布尔型	FALSE			CH0 Homing Mode Running
5		%I0.4	布尔型	FALSE			CH0 Position Mode Running
6		%I0.5	布尔型	FALSE			CH0 Velocity Mode Running
7		%I0.6	布尔型	FALSE			CH0 Homed
8		%I0.7	布尔型	TRUE			CH0 Location Arrival
9		%I1.0	布尔型	FALSE			CH0 Velocity Arrival
10		%I1.1	布尔型	FALSE			CH0 Positive Limit Signal
11		%I1.2	布尔型	FALSE			CH0 Negative Limit Signal
12		%I1.3	布尔型	FALSE			CH0 Home Signal
13		%I1.4	布尔型	FALSE			CH0 Brake Signal
14		%I2.0	布尔型	FALSE			CH1 Pulse Output Direction
15		%I2.1	布尔型	FALSE			CH1 Pulse Status Flag 1
16		%I2.2	布尔型	FALSE			CH1 Pulse Status Flag 2
17		%I2.3	布尔型	FALSE			CH1 Homing Mode Running
18		%I2.4	布尔型	FALSE			CH1 Position Mode Running
19		%I2.5	布尔型	FALSE			CH1 Velocity Mode Running
20		%I2.6	布尔型	FALSE			CH1 Homed
21		%I2.7	布尔型	FALSE			CH1 Location Arrival
22		%I3.0	布尔型	FALSE			CH1 Velocity Arrival
23		%I3.1	布尔型	FALSE			CH1 Positive Limit Signal
24		%I3.2	布尔型	FALSE			CH1 Negative Limit Signal
25		%I3.3	布尔型	FALSE			CH1 Home Signal
26		%I3.4	布尔型	FALSE			CH1 Brake Signal
27		%I4.0	布尔型	FALSE			CH2 Pulse Output Direction
28		%I4.1	布尔型	FALSE			CH2 Pulse Status Flag 1
29		%I4.2	布尔型	FALSE			CH2 Pulse Status Flag 2

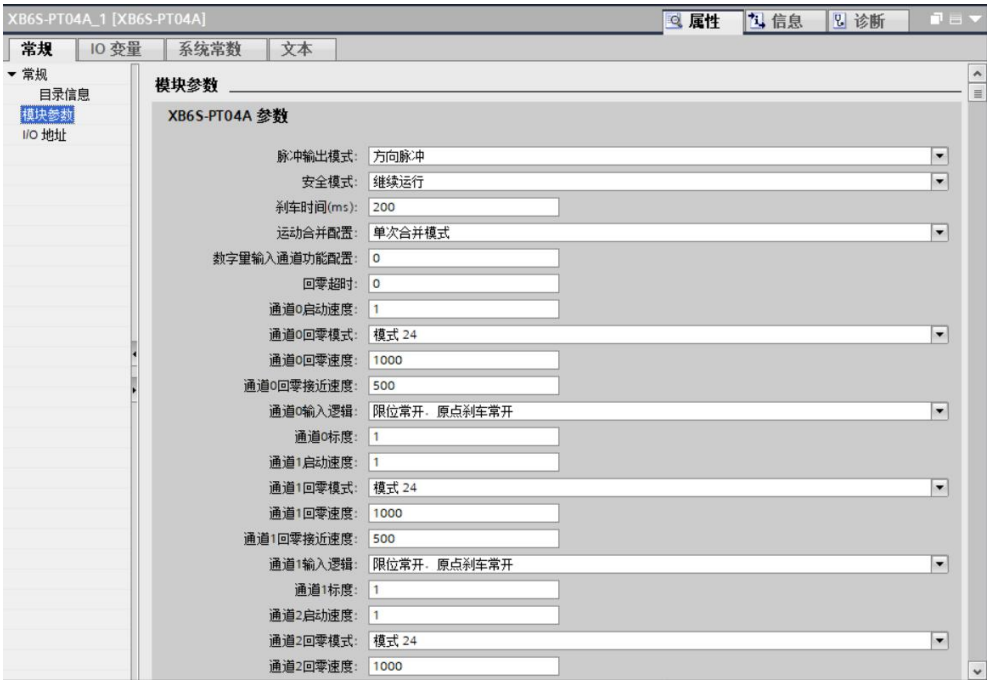
g. You can also see that the current coordinate of channel 0 is 50000, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
36		%I5.1	布尔型	FALSE		CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE		CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE		CH2 Home Signal
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	50000		CH1 Current Location
58		%ID20	带符号十进制	0		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location
64		%ID44	带符号十进制	0		CH4 Current Velocity

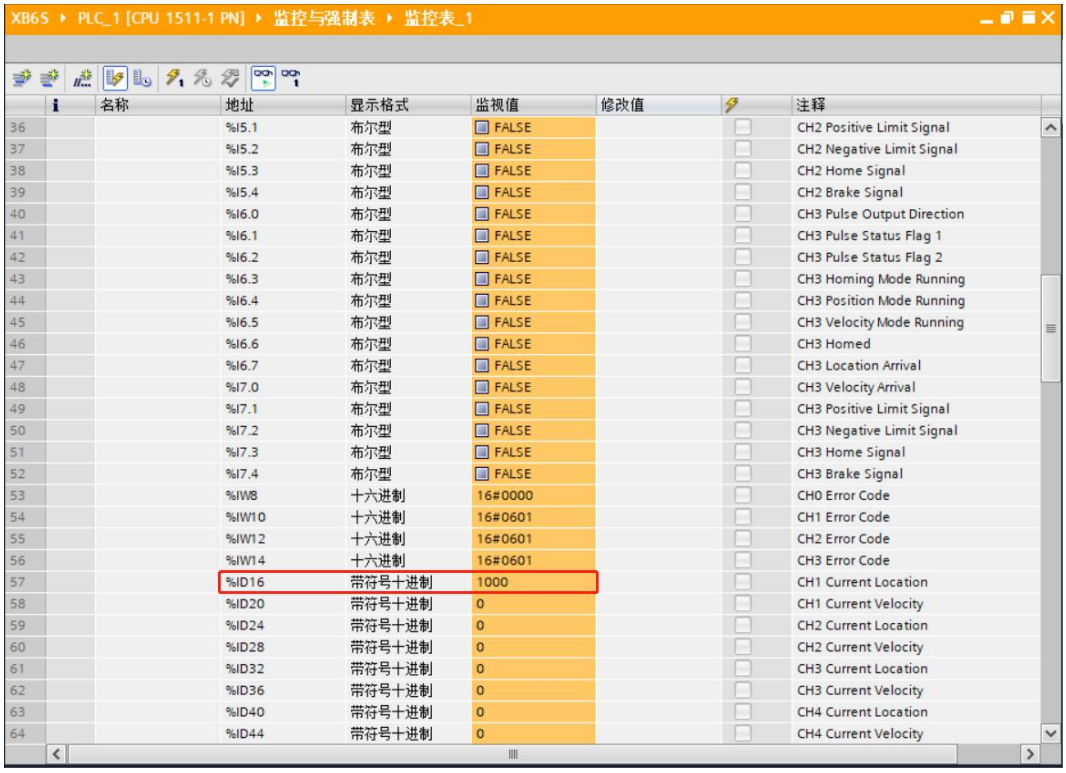
◆ **Channel 0 is currently at 1000, moves to -20000, and runs at a speed of 100000 Hz**

a. Configure the configuration parameters as shown in the following figure.



After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

b. The current position of channel 0 is 1000, as shown in the figure below.



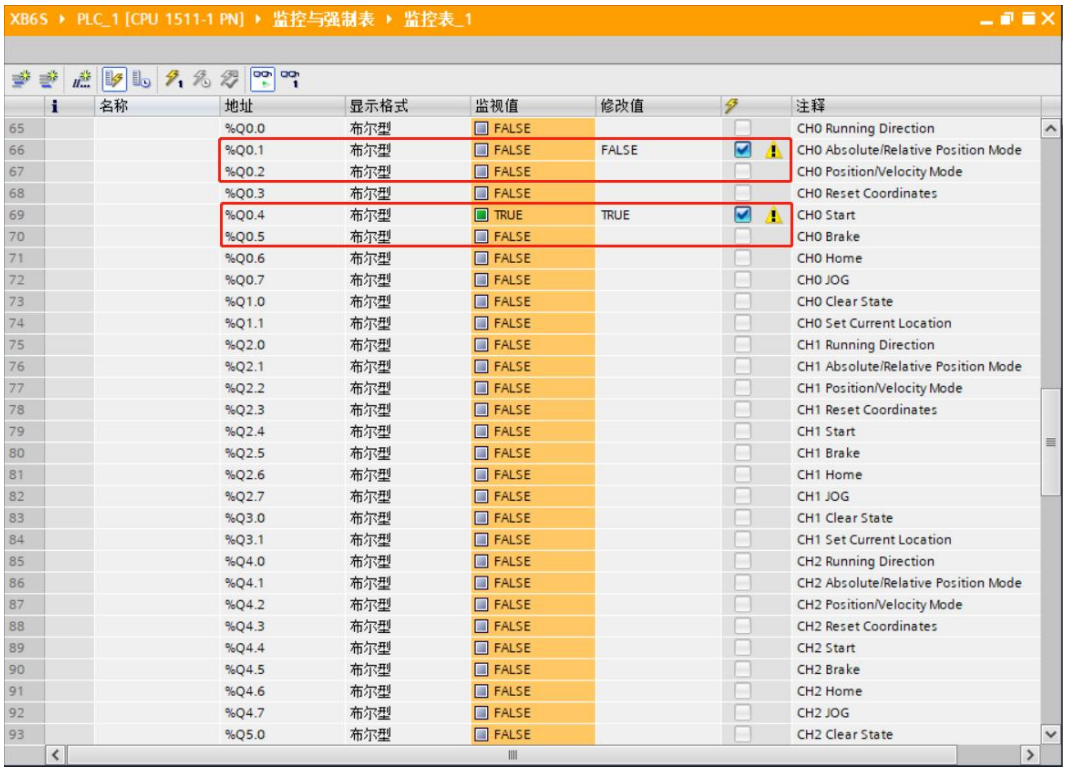
	名称	地址	显示格式	监视值	修改值		注释
36		%I5.1	布尔型	FALSE			CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE			CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE			CH2 Home Signal
39		%I5.4	布尔型	FALSE			CH2 Brake Signal
40		%I6.0	布尔型	FALSE			CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE			CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE			CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE			CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE			CH3 Position Mode Running
45		%I6.5	布尔型	FALSE			CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE			CH3 Homed
47		%I6.7	布尔型	FALSE			CH3 Location Arrival
48		%I7.0	布尔型	FALSE			CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE			CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE			CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE			CH3 Home Signal
52		%I7.4	布尔型	FALSE			CH3 Brake Signal
53		%IW8	十六进制	16#0000			CH0 Error Code
54		%IW10	十六进制	16#0601			CH1 Error Code
55		%IW12	十六进制	16#0601			CH2 Error Code
56		%IW14	十六进制	16#0601			CH3 Error Code
57		%ID16	带符号十进制	1000			CH1 Current Location
58		%ID20	带符号十进制	0			CH1 Current Velocity
59		%ID24	带符号十进制	0			CH2 Current Location
60		%ID28	带符号十进制	0			CH2 Current Velocity
61		%ID32	带符号十进制	0			CH3 Current Location
62		%ID36	带符号十进制	0			CH3 Current Velocity
63		%ID40	带符号十进制	0			CH4 Current Location
64		%ID44	带符号十进制	0			CH4 Current Velocity

c. Set channel 0 to absolute position mode;

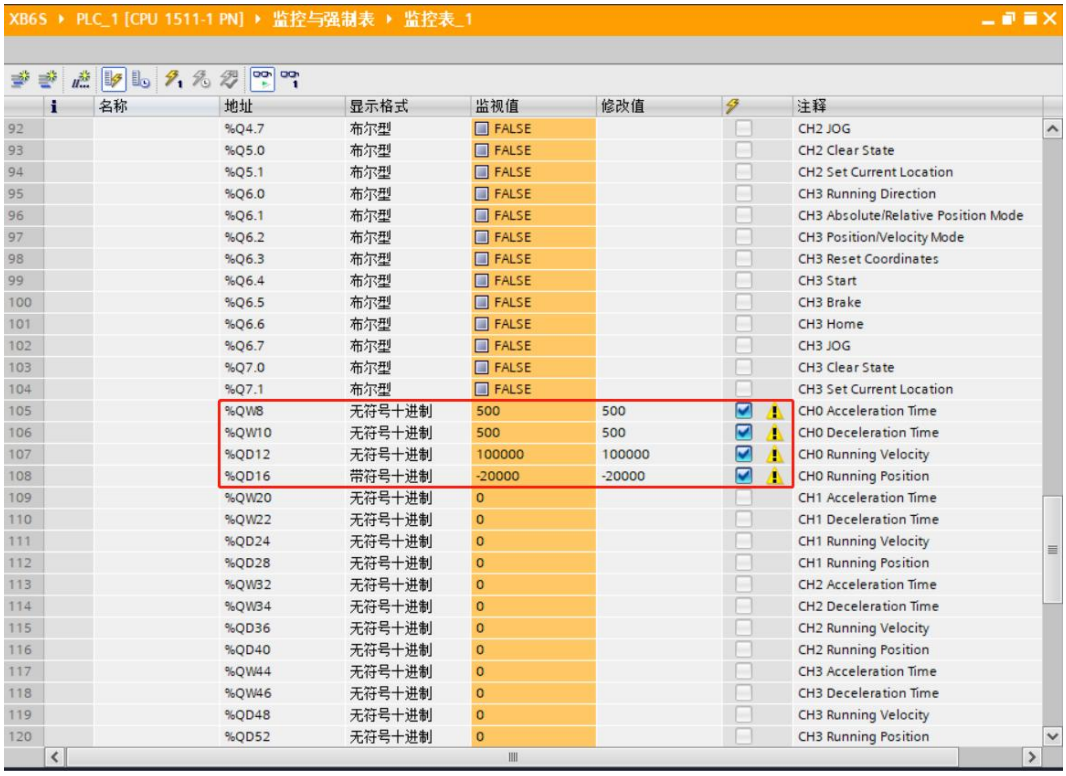
d. Configure channel 0 to run at -20000 steps, 100000 Hz speed, and 500 acceleration and deceleration times;

e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

f. Set the start command of channel 0 from 0 to 1, as shown in the figure below.

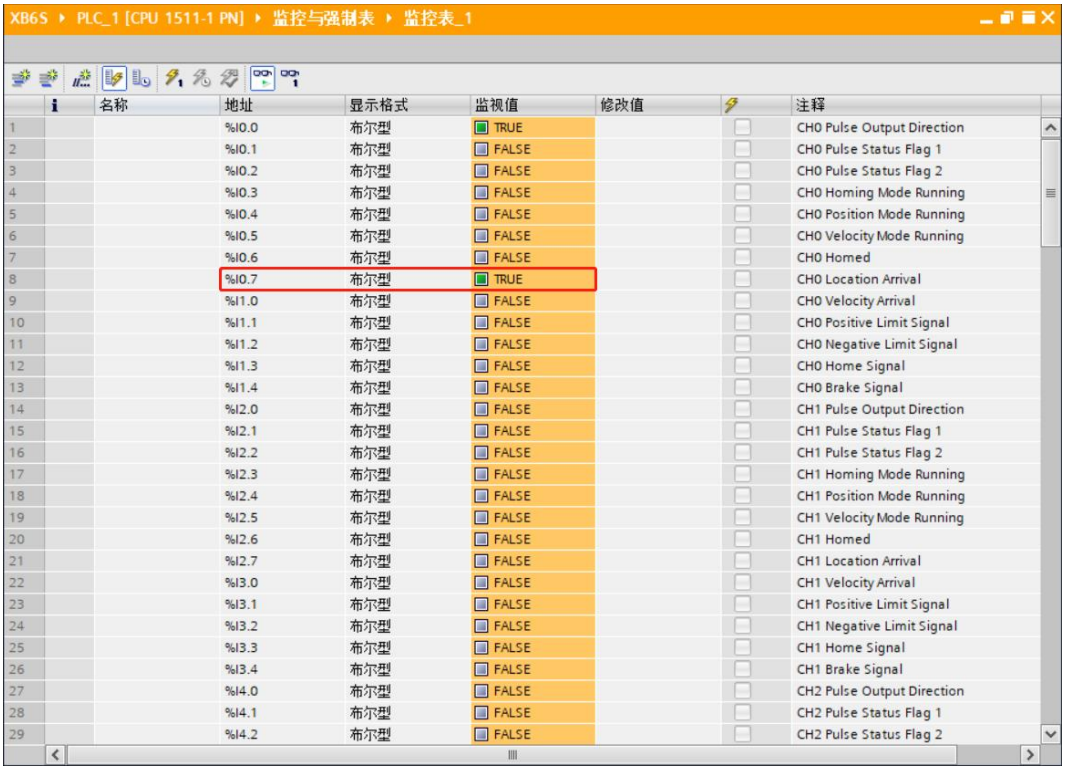


	名称	地址	显示格式	监视值	修改值		注释
65		%Q0.0	布尔型	FALSE			CH0 Running Direction
66		%Q0.1	布尔型	FALSE	FALSE		CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE			CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE			CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE		CH0 Start
70		%Q0.5	布尔型	FALSE			CH0 Brake
71		%Q0.6	布尔型	FALSE			CH0 Home
72		%Q0.7	布尔型	FALSE			CH0 JOG
73		%Q1.0	布尔型	FALSE			CH0 Clear State
74		%Q1.1	布尔型	FALSE			CH0 Set Current Location
75		%Q2.0	布尔型	FALSE			CH1 Running Direction
76		%Q2.1	布尔型	FALSE			CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE			CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE			CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE			CH1 Start
80		%Q2.5	布尔型	FALSE			CH1 Brake
81		%Q2.6	布尔型	FALSE			CH1 Home
82		%Q2.7	布尔型	FALSE			CH1 JOG
83		%Q3.0	布尔型	FALSE			CH1 Clear State
84		%Q3.1	布尔型	FALSE			CH1 Set Current Location
85		%Q4.0	布尔型	FALSE			CH2 Running Direction
86		%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE			CH2 Start
90		%Q4.5	布尔型	FALSE			CH2 Brake
91		%Q4.6	布尔型	FALSE			CH2 Home
92		%Q4.7	布尔型	FALSE			CH2 JOG
93		%Q5.0	布尔型	FALSE			CH2 Clear State



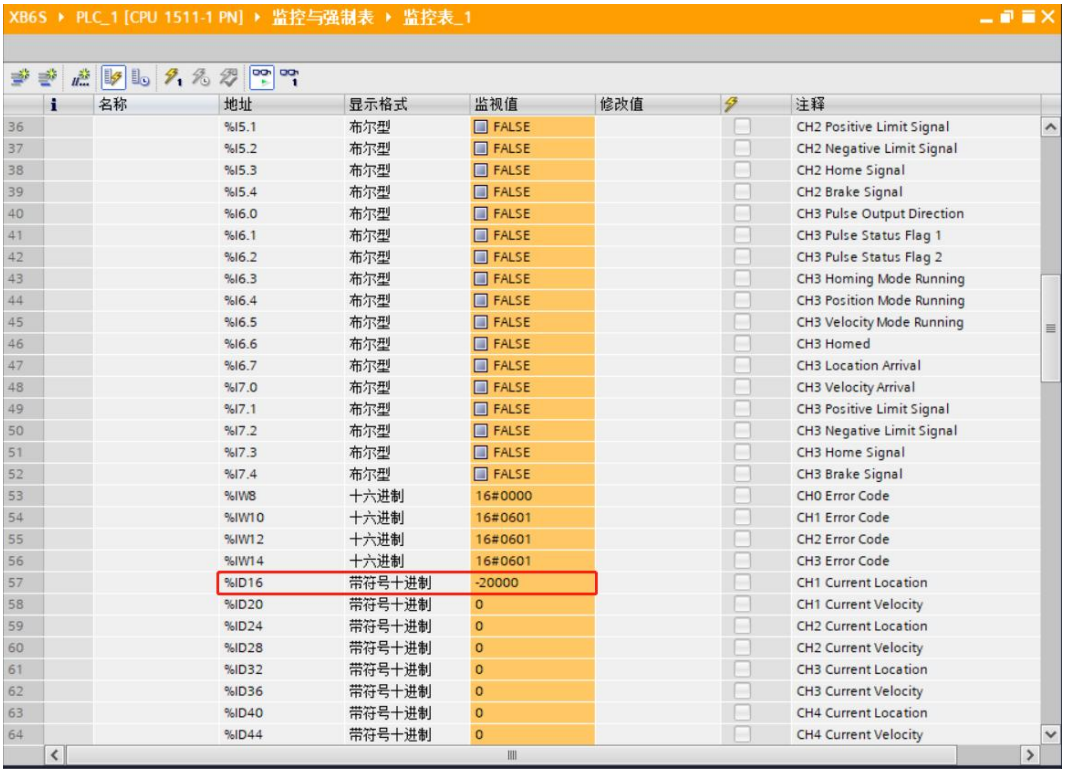
	名称	地址	显示格式	监视值	修改值	注释
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State
94		%Q5.1	布尔型	FALSE		CH2 Set Current Location
95		%Q6.0	布尔型	FALSE		CH3 Running Direction
96		%Q6.1	布尔型	FALSE		CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE		CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE		CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE		CH3 Start
100		%Q6.5	布尔型	FALSE		CH3 Brake
101		%Q6.6	布尔型	FALSE		CH3 Home
102		%Q6.7	布尔型	FALSE		CH3 JOG
103		%Q7.0	布尔型	FALSE		CH3 Clear State
104		%Q7.1	布尔型	FALSE		CH3 Set Current Location
105		%QW8	无符号十进制	500	500	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	CH0 Deceleration Time
107		%QD12	无符号十进制	100000	100000	CH0 Running Velocity
108		%QD16	带符号十进制	-20000	-20000	CH0 Running Position
109		%QW20	无符号十进制	0		CH1 Acceleration Time
110		%QW22	无符号十进制	0		CH1 Deceleration Time
111		%QD24	无符号十进制	0		CH1 Running Velocity
112		%QD28	无符号十进制	0		CH1 Running Position
113		%QW32	无符号十进制	0		CH2 Acceleration Time
114		%QW34	无符号十进制	0		CH2 Deceleration Time
115		%QD36	无符号十进制	0		CH2 Running Velocity
116		%QD40	无符号十进制	0		CH2 Running Position
117		%QW44	无符号十进制	0		CH3 Acceleration Time
118		%QW46	无符号十进制	0		CH3 Deceleration Time
119		%QD48	无符号十进制	0		CH3 Running Velocity
120		%QD52	无符号十进制	0		CH3 Running Position

g. After the movement is completed, you can see that the channel 0 position has been set to 1, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
1		%I0.0	布尔型	TRUE		CH0 Pulse Output Direction
2		%I0.1	布尔型	FALSE		CH0 Pulse Status Flag 1
3		%I0.2	布尔型	FALSE		CH0 Pulse Status Flag 2
4		%I0.3	布尔型	FALSE		CH0 Homing Mode Running
5		%I0.4	布尔型	FALSE		CH0 Position Mode Running
6		%I0.5	布尔型	FALSE		CH0 Velocity Mode Running
7		%I0.6	布尔型	FALSE		CH0 Homed
8		%I0.7	布尔型	TRUE		CH0 Location Arrival
9		%I1.0	布尔型	FALSE		CH0 Velocity Arrival
10		%I1.1	布尔型	FALSE		CH0 Positive Limit Signal
11		%I1.2	布尔型	FALSE		CH0 Negative Limit Signal
12		%I1.3	布尔型	FALSE		CH0 Home Signal
13		%I1.4	布尔型	FALSE		CH0 Brake Signal
14		%I2.0	布尔型	FALSE		CH1 Pulse Output Direction
15		%I2.1	布尔型	FALSE		CH1 Pulse Status Flag 1
16		%I2.2	布尔型	FALSE		CH1 Pulse Status Flag 2
17		%I2.3	布尔型	FALSE		CH1 Homing Mode Running
18		%I2.4	布尔型	FALSE		CH1 Position Mode Running
19		%I2.5	布尔型	FALSE		CH1 Velocity Mode Running
20		%I2.6	布尔型	FALSE		CH1 Homed
21		%I2.7	布尔型	FALSE		CH1 Location Arrival
22		%I3.0	布尔型	FALSE		CH1 Velocity Arrival
23		%I3.1	布尔型	FALSE		CH1 Positive Limit Signal
24		%I3.2	布尔型	FALSE		CH1 Negative Limit Signal
25		%I3.3	布尔型	FALSE		CH1 Home Signal
26		%I3.4	布尔型	FALSE		CH1 Brake Signal
27		%I4.0	布尔型	FALSE		CH2 Pulse Output Direction
28		%I4.1	布尔型	FALSE		CH2 Pulse Status Flag 1
29		%I4.2	布尔型	FALSE		CH2 Pulse Status Flag 2

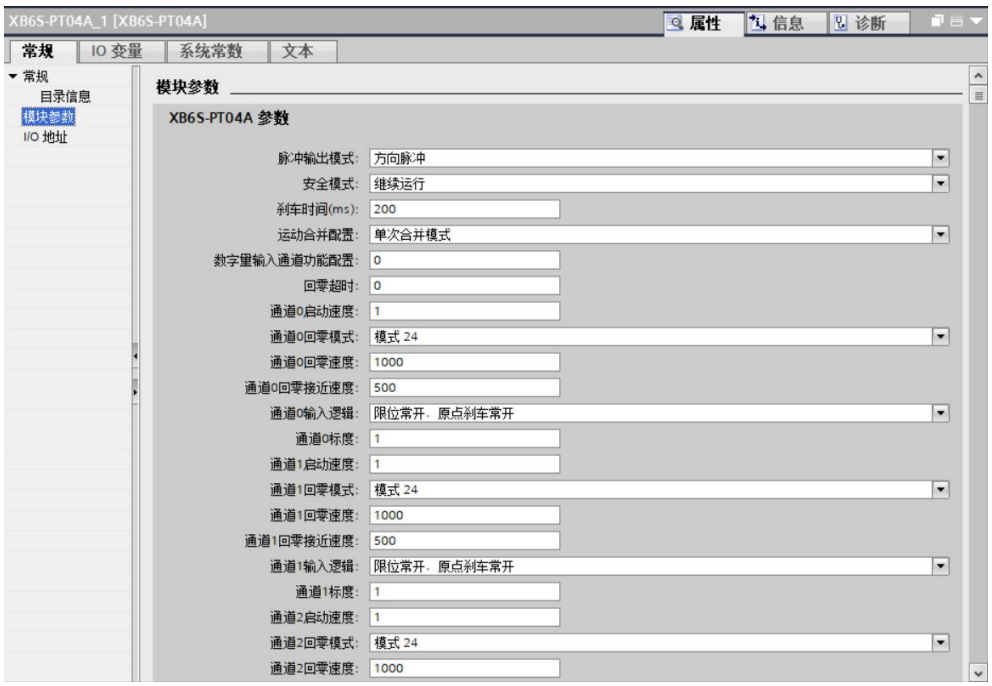
h. You can also see that the current coordinate of channel 0 is -20000, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
36		%I5.1	布尔型	FALSE		CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE		CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE		CH2 Home Signal
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	-20000		CH1 Current Location
58		%ID20	带符号十进制	0		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location
64		%ID44	带符号十进制	0		CH4 Current Velocity

◆ **Channel 0 turns on speed mode, running speed 100000Hz**

a. Configure the configuration parameters as shown in the following figure.



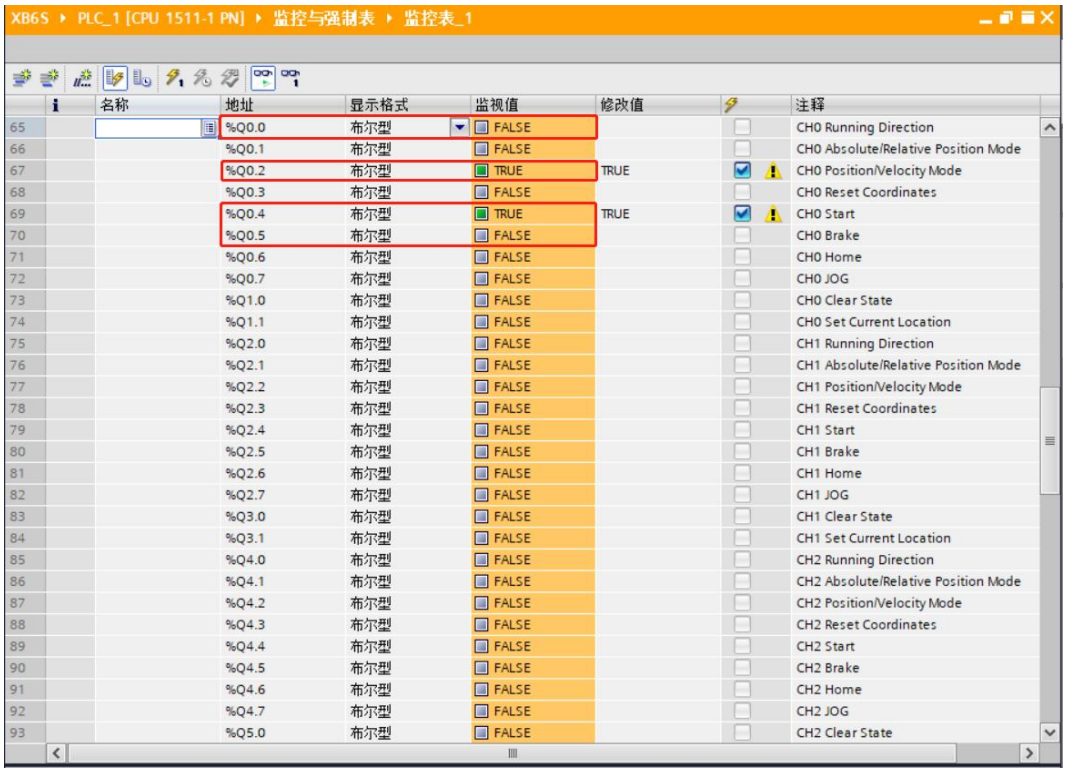
After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

b. Set channel 0 to speed mode;

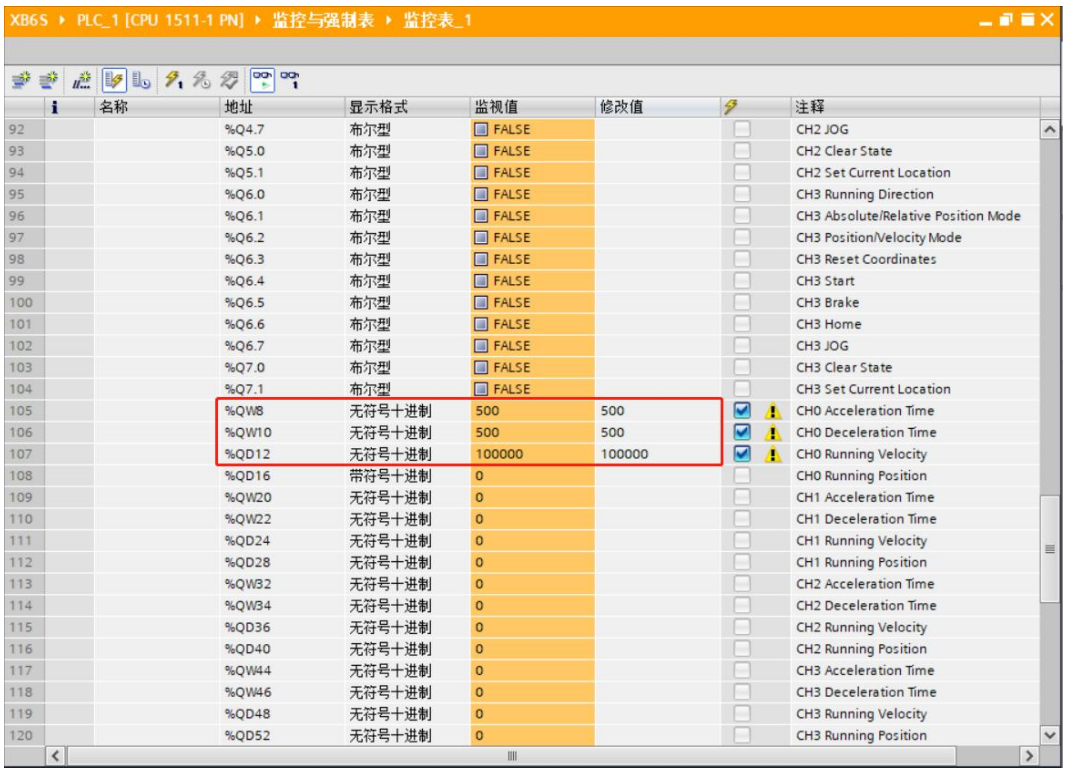
c. Configure channel 0 to run at a speed of 100000 Hz and move in a forward direction of 0;

d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.

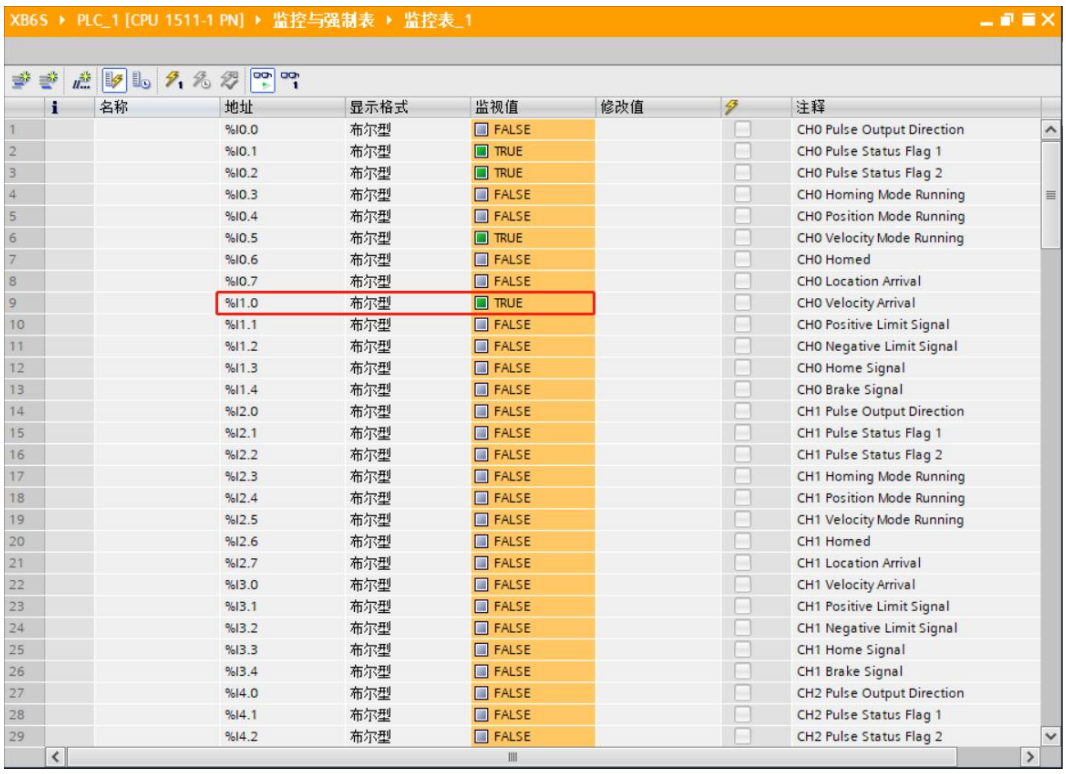


	名称	地址	显示格式	监视值	修改值	注释
65		%Q0.0	布尔型	FALSE		CH0 Running Direction
66		%Q0.1	布尔型	FALSE		CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	TRUE	TRUE	CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE		CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE	CH0 Start
70		%Q0.5	布尔型	FALSE		CH0 Brake
71		%Q0.6	布尔型	FALSE		CH0 Home
72		%Q0.7	布尔型	FALSE		CH0 JOG
73		%Q1.0	布尔型	FALSE		CH0 Clear State
74		%Q1.1	布尔型	FALSE		CH0 Set Current Location
75		%Q2.0	布尔型	FALSE		CH1 Running Direction
76		%Q2.1	布尔型	FALSE		CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE		CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE		CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE		CH1 Start
80		%Q2.5	布尔型	FALSE		CH1 Brake
81		%Q2.6	布尔型	FALSE		CH1 Home
82		%Q2.7	布尔型	FALSE		CH1 JOG
83		%Q3.0	布尔型	FALSE		CH1 Clear State
84		%Q3.1	布尔型	FALSE		CH1 Set Current Location
85		%Q4.0	布尔型	FALSE		CH2 Running Direction
86		%Q4.1	布尔型	FALSE		CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE		CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE		CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE		CH2 Start
90		%Q4.5	布尔型	FALSE		CH2 Brake
91		%Q4.6	布尔型	FALSE		CH2 Home
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State



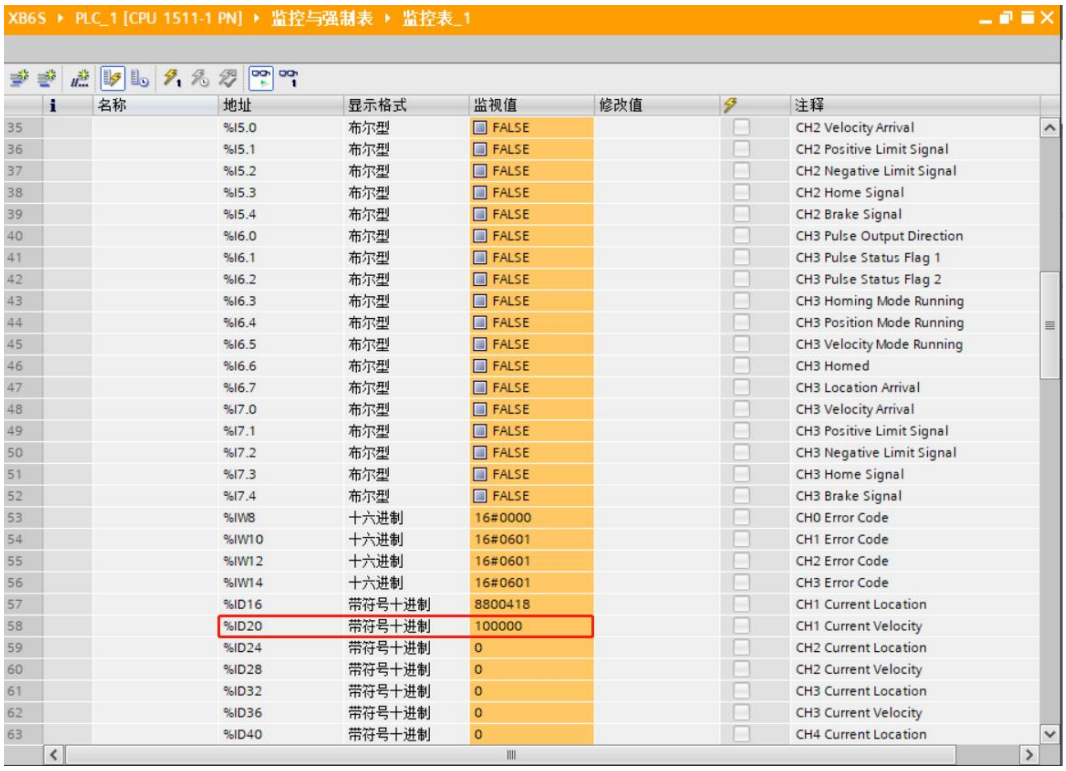
	名称	地址	显示格式	监视值	修改值	注释
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State
94		%Q5.1	布尔型	FALSE		CH2 Set Current Location
95		%Q6.0	布尔型	FALSE		CH3 Running Direction
96		%Q6.1	布尔型	FALSE		CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE		CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE		CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE		CH3 Start
100		%Q6.5	布尔型	FALSE		CH3 Brake
101		%Q6.6	布尔型	FALSE		CH3 Home
102		%Q6.7	布尔型	FALSE		CH3 JOG
103		%Q7.0	布尔型	FALSE		CH3 Clear State
104		%Q7.1	布尔型	FALSE		CH3 Set Current Location
105		%QW8	无符号十进制	500	500	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	CH0 Deceleration Time
107		%QD12	无符号十进制	100000	100000	CH0 Running Velocity
108		%QD16	带符号十进制	0		CH0 Running Position
109		%QW20	无符号十进制	0		CH1 Acceleration Time
110		%QW22	无符号十进制	0		CH1 Deceleration Time
111		%QD24	无符号十进制	0		CH1 Running Velocity
112		%QD28	无符号十进制	0		CH1 Running Position
113		%QW32	无符号十进制	0		CH2 Acceleration Time
114		%QW34	无符号十进制	0		CH2 Deceleration Time
115		%QD36	无符号十进制	0		CH2 Running Velocity
116		%QD40	无符号十进制	0		CH2 Running Position
117		%QW44	无符号十进制	0		CH3 Acceleration Time
118		%QW46	无符号十进制	0		CH3 Deceleration Time
119		%QD48	无符号十进制	0		CH3 Running Velocity
120		%QD52	无符号十进制	0		CH3 Running Position

f. During the motion, you can see that the channel 0 speed arrival is set to 1, as shown in the figure below.



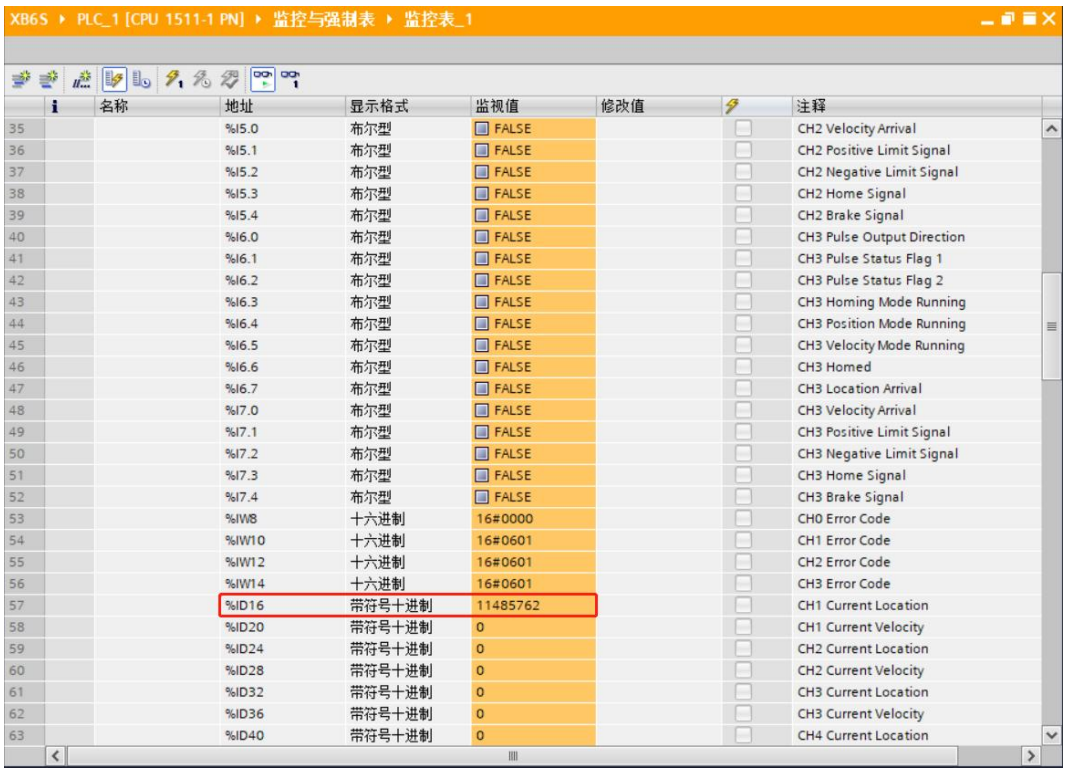
	名称	地址	显示格式	监视值	修改值	注释
1		%I0.0	布尔型	FALSE		CH0 Pulse Output Direction
2		%I0.1	布尔型	TRUE		CH0 Pulse Status Flag 1
3		%I0.2	布尔型	TRUE		CH0 Pulse Status Flag 2
4		%I0.3	布尔型	FALSE		CH0 Homing Mode Running
5		%I0.4	布尔型	FALSE		CH0 Position Mode Running
6		%I0.5	布尔型	TRUE		CH0 Velocity Mode Running
7		%I0.6	布尔型	FALSE		CH0 Homed
8		%I0.7	布尔型	FALSE		CH0 Location Arrival
9		%I1.0	布尔型	TRUE		CH0 Velocity Arrival
10		%I1.1	布尔型	FALSE		CH0 Positive Limit Signal
11		%I1.2	布尔型	FALSE		CH0 Negative Limit Signal
12		%I1.3	布尔型	FALSE		CH0 Home Signal
13		%I1.4	布尔型	FALSE		CH0 Brake Signal
14		%I2.0	布尔型	FALSE		CH1 Pulse Output Direction
15		%I2.1	布尔型	FALSE		CH1 Pulse Status Flag 1
16		%I2.2	布尔型	FALSE		CH1 Pulse Status Flag 2
17		%I2.3	布尔型	FALSE		CH1 Homing Mode Running
18		%I2.4	布尔型	FALSE		CH1 Position Mode Running
19		%I2.5	布尔型	FALSE		CH1 Velocity Mode Running
20		%I2.6	布尔型	FALSE		CH1 Homed
21		%I2.7	布尔型	FALSE		CH1 Location Arrival
22		%I3.0	布尔型	FALSE		CH1 Velocity Arrival
23		%I3.1	布尔型	FALSE		CH1 Positive Limit Signal
24		%I3.2	布尔型	FALSE		CH1 Negative Limit Signal
25		%I3.3	布尔型	FALSE		CH1 Home Signal
26		%I3.4	布尔型	FALSE		CH1 Brake Signal
27		%I4.0	布尔型	FALSE		CH2 Pulse Output Direction
28		%I4.1	布尔型	FALSE		CH2 Pulse Status Flag 1
29		%I4.2	布尔型	FALSE		CH2 Pulse Status Flag 2

g. During the movement, the actual running speed can also be 100000Hz, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
35		%I5.0	布尔型	FALSE		CH2 Velocity Arrival
36		%I5.1	布尔型	FALSE		CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE		CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE		CH2 Home Signal
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	8800418		CH1 Current Location
58		%ID20	带符号十进制	100000		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location

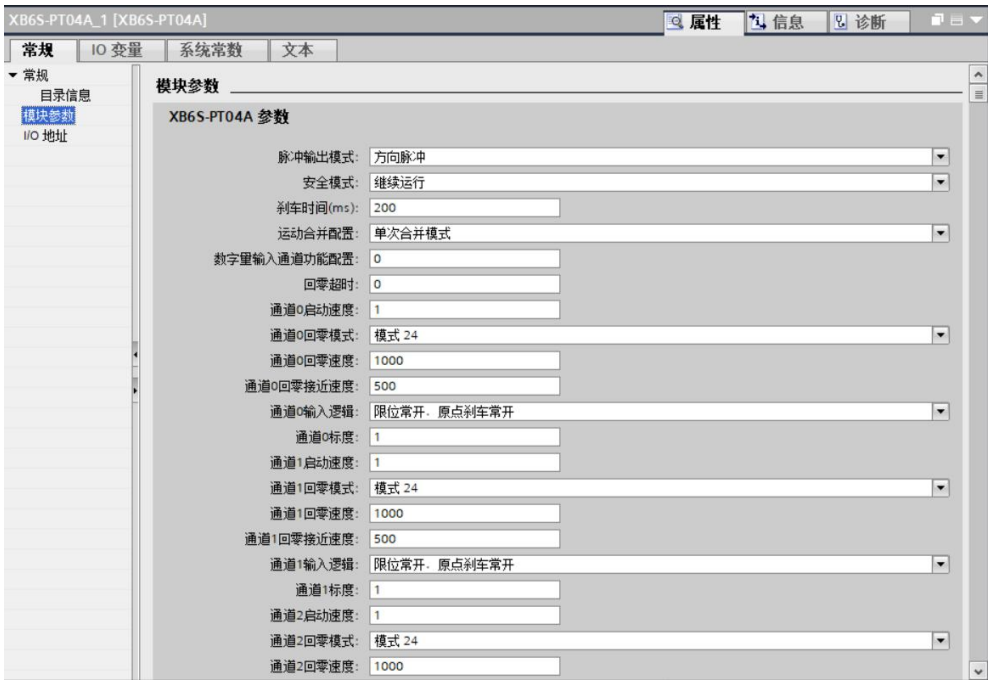
h. Entering a brake command or triggering a positive limit signal can stop the movement, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
35		%I5.0	布尔型	FALSE		CH2 Velocity Arrival
36		%I5.1	布尔型	FALSE		CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE		CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE		CH2 Home Signal
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	11485762		CH1 Current Location
58		%ID20	带符号十进制	0		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location

◆ **Channel 0 runs at 100000Hz, in jog mode**

a. Configure the configuration parameters as shown in the following figure.

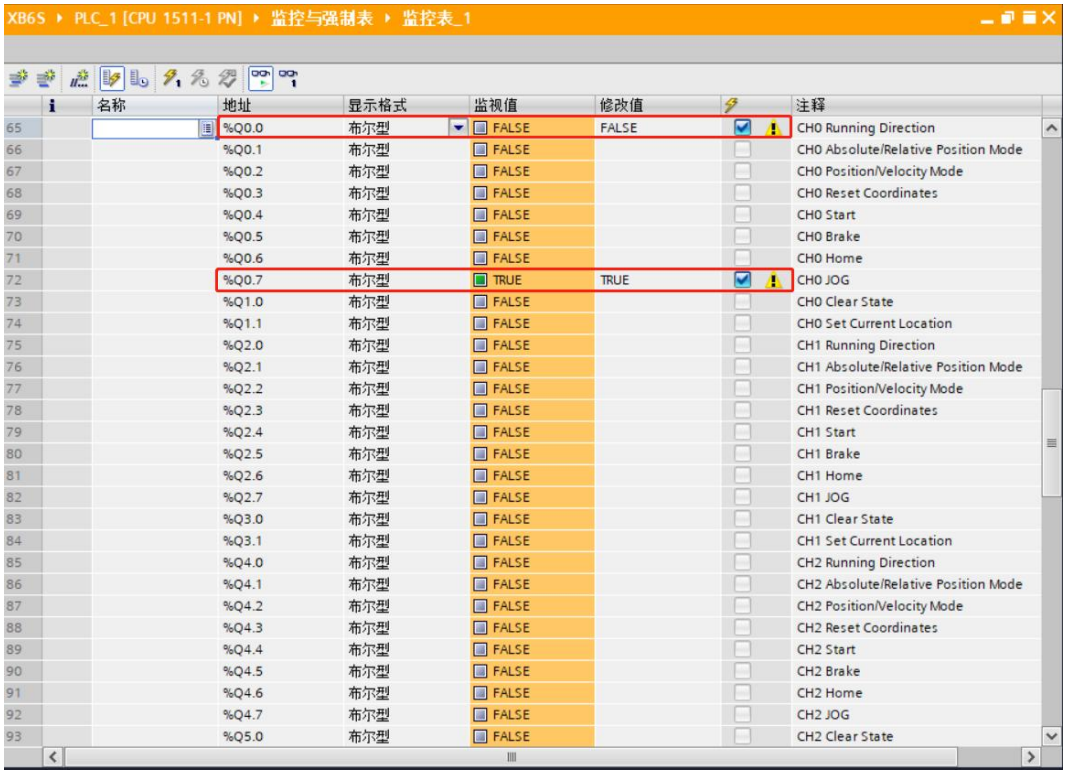


After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

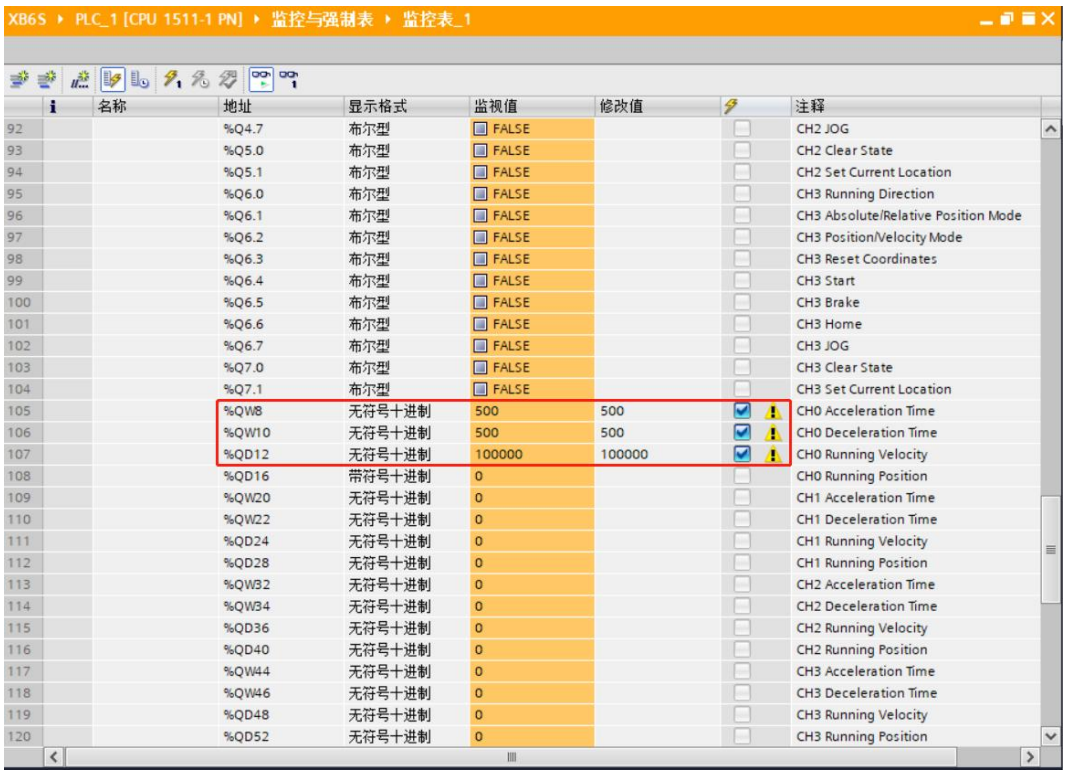
b. Configure channel 0 to run at a speed of 100000, run in a direction of 0 forward, and set the acceleration and deceleration times to 500;

c. Make sure channel 0 is in a static state;

d. Set the jog command of channel 0 from 0 to 1 to start movement, as shown in the figure below.

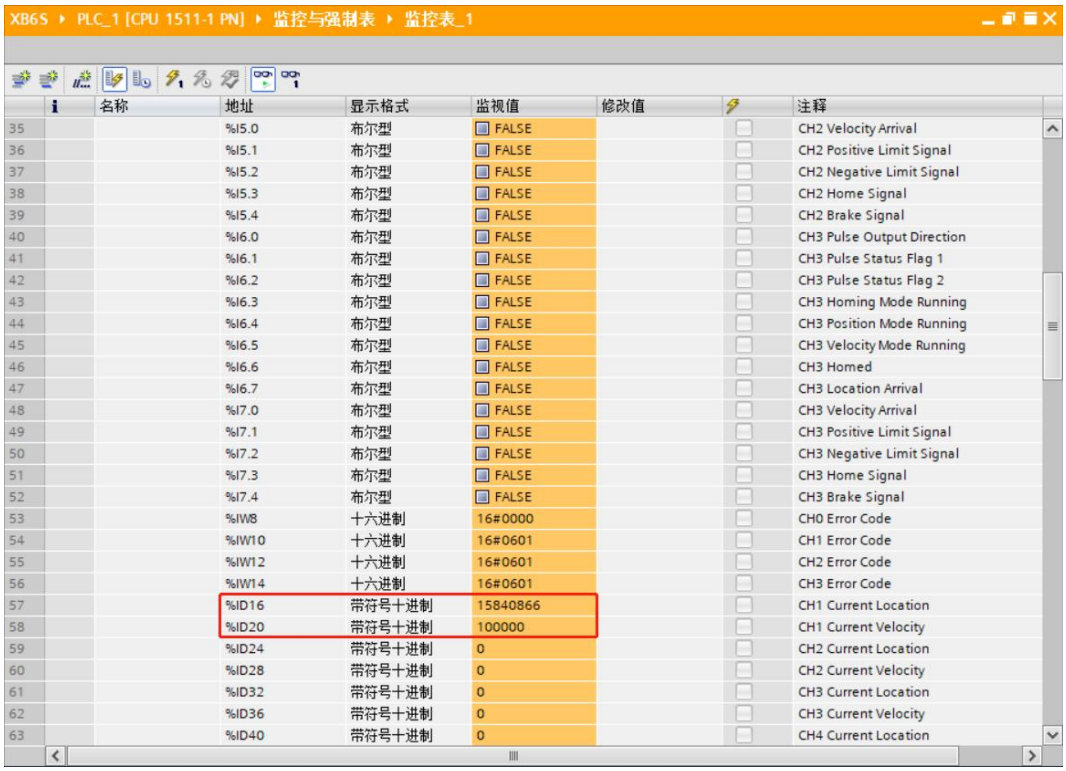


	名称	地址	显示格式	监视值	修改值	注释
65		%Q0.0	布尔型	FALSE	FALSE	CH0 Running Direction
66		%Q0.1	布尔型	FALSE		CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE		CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE		CH0 Reset Coordinates
69		%Q0.4	布尔型	FALSE		CH0 Start
70		%Q0.5	布尔型	FALSE		CH0 Brake
71		%Q0.6	布尔型	FALSE		CH0 Home
72		%Q0.7	布尔型	TRUE	TRUE	CH0 JOG
73		%Q1.0	布尔型	FALSE		CH0 Clear State
74		%Q1.1	布尔型	FALSE		CH0 Set Current Location
75		%Q2.0	布尔型	FALSE		CH1 Running Direction
76		%Q2.1	布尔型	FALSE		CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE		CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE		CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE		CH1 Start
80		%Q2.5	布尔型	FALSE		CH1 Brake
81		%Q2.6	布尔型	FALSE		CH1 Home
82		%Q2.7	布尔型	FALSE		CH1 JOG
83		%Q3.0	布尔型	FALSE		CH1 Clear State
84		%Q3.1	布尔型	FALSE		CH1 Set Current Location
85		%Q4.0	布尔型	FALSE		CH2 Running Direction
86		%Q4.1	布尔型	FALSE		CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE		CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE		CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE		CH2 Start
90		%Q4.5	布尔型	FALSE		CH2 Brake
91		%Q4.6	布尔型	FALSE		CH2 Home
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State



	名称	地址	显示格式	监视值	修改值	注释
92		%Q4.7	布尔型	FALSE		CH2 JOG
93		%Q5.0	布尔型	FALSE		CH2 Clear State
94		%Q5.1	布尔型	FALSE		CH2 Set Current Location
95		%Q6.0	布尔型	FALSE		CH3 Running Direction
96		%Q6.1	布尔型	FALSE		CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE		CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE		CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE		CH3 Start
100		%Q6.5	布尔型	FALSE		CH3 Brake
101		%Q6.6	布尔型	FALSE		CH3 Home
102		%Q6.7	布尔型	FALSE		CH3 JOG
103		%Q7.0	布尔型	FALSE		CH3 Clear State
104		%Q7.1	布尔型	FALSE		CH3 Set Current Location
105		%QW8	无符号十进制	500	500	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	CH0 Deceleration Time
107		%QD12	无符号十进制	100000	100000	CH0 Running Velocity
108		%QD16	带符号十进制	0		CH0 Running Position
109		%QW20	无符号十进制	0		CH1 Acceleration Time
110		%QW22	无符号十进制	0		CH1 Deceleration Time
111		%QD24	无符号十进制	0		CH1 Running Velocity
112		%QD28	无符号十进制	0		CH1 Running Position
113		%QW32	无符号十进制	0		CH2 Acceleration Time
114		%QW34	无符号十进制	0		CH2 Deceleration Time
115		%QD36	无符号十进制	0		CH2 Running Velocity
116		%QD40	无符号十进制	0		CH2 Running Position
117		%QW44	无符号十进制	0		CH3 Acceleration Time
118		%QW46	无符号十进制	0		CH3 Deceleration Time
119		%QD48	无符号十进制	0		CH3 Running Velocity
120		%QD52	无符号十进制	0		CH3 Running Position

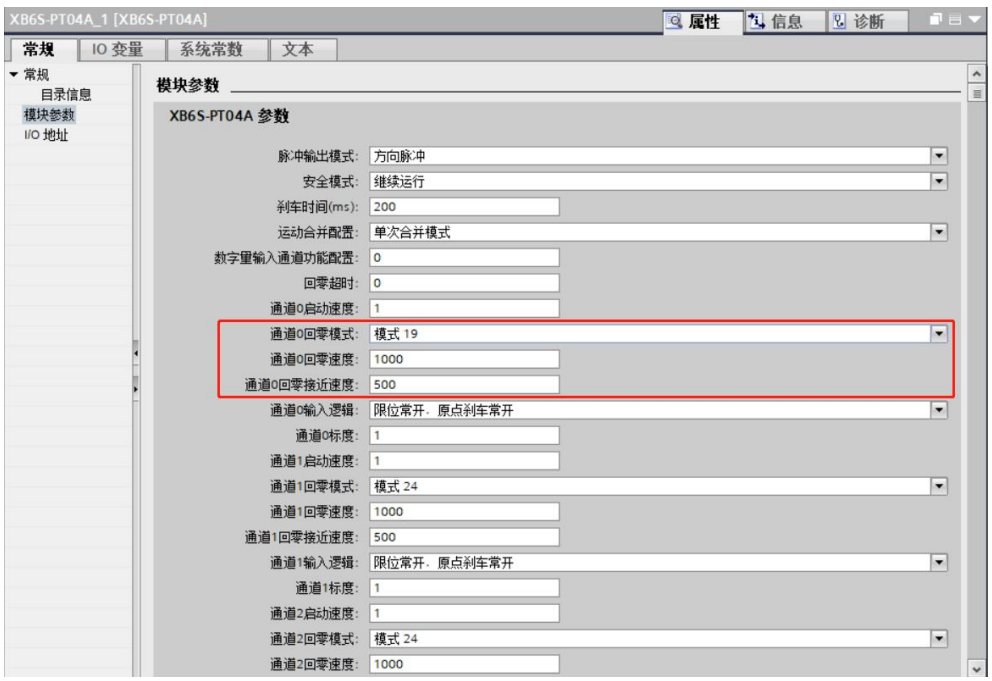
e. During the motion, you can see the actual running speed and real-time position of channel 0, as shown in the figure below. Inputting a brake command or triggering a positive limit signal can stop the motion.



	名称	地址	显示格式	监视值	修改值	注释
35		%I5.0	布尔型	FALSE		CH2 Velocity Arrival
36		%I5.1	布尔型	FALSE		CH2 Positive Limit Signal
37		%I5.2	布尔型	FALSE		CH2 Negative Limit Signal
38		%I5.3	布尔型	FALSE		CH2 Home Signal
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	15840866		CH1 Current Location
58		%ID20	带符号十进制	100000		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location

◆ **Channel 0 turns on and returns to zero**

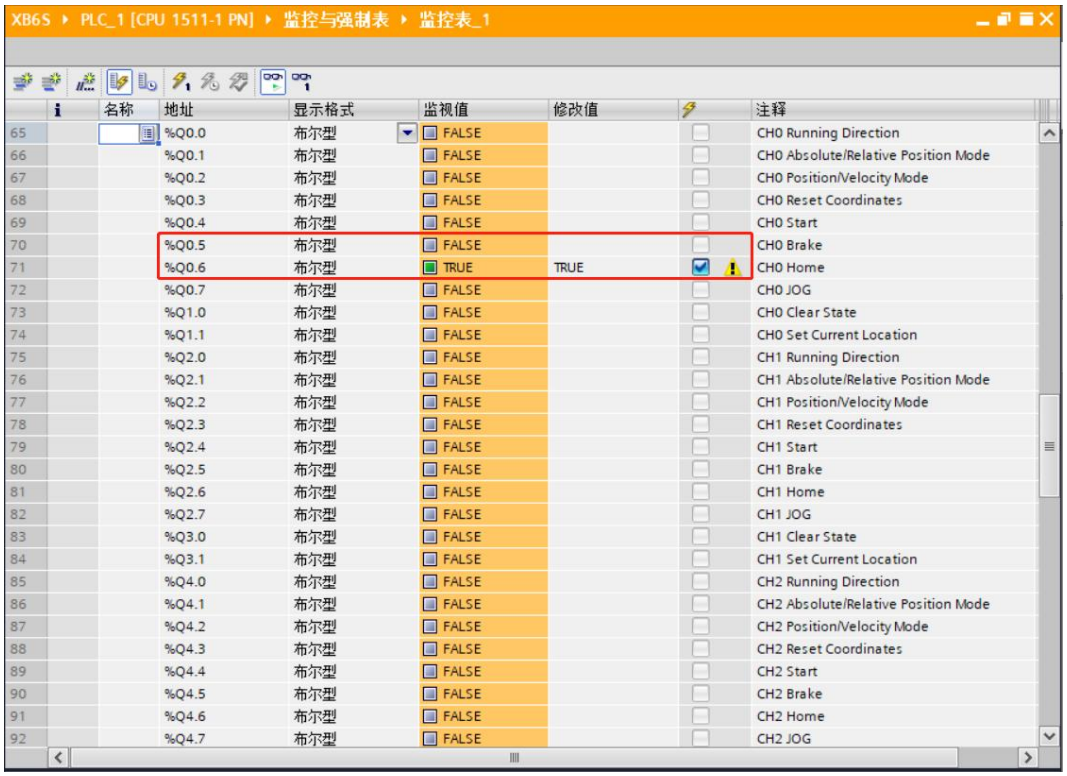
a. Configure the configuration parameters, select the homing mode and set the homing speed and homing approach speed, as shown in the figure below.



After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

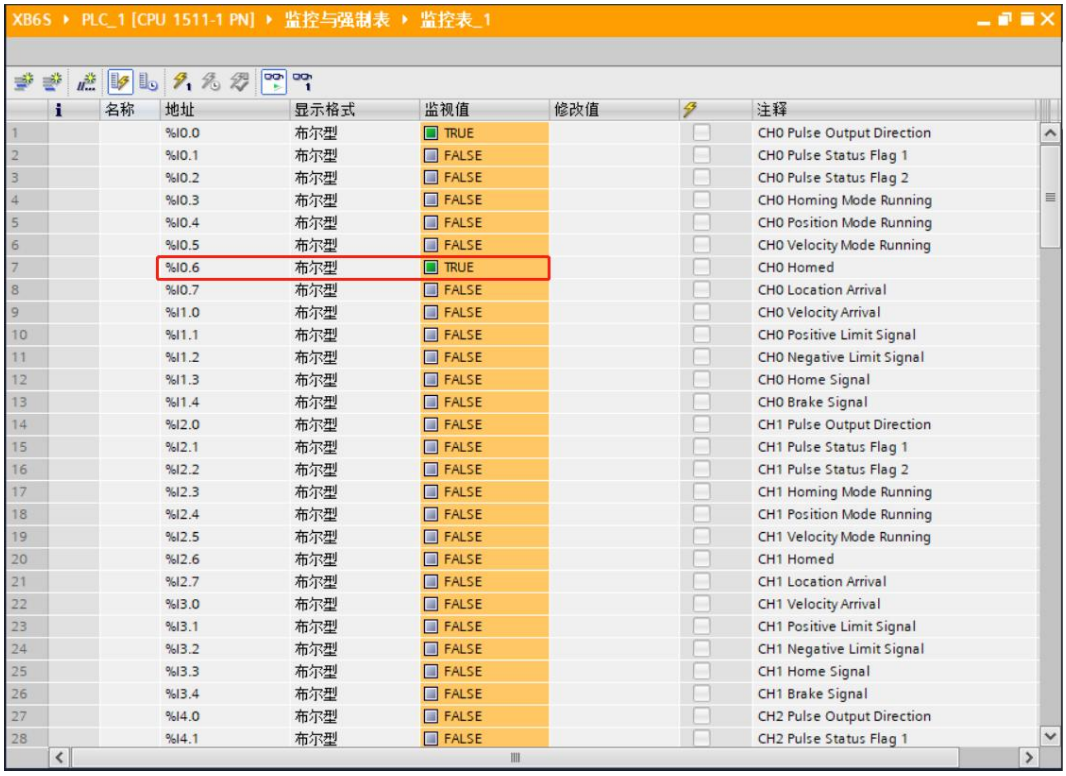
b. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

c. Set the return to zero command of channel 0 from 0 to 1, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值		注释
65		%Q0.0	布尔型	FALSE			CH0 Running Direction
66		%Q0.1	布尔型	FALSE			CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE			CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE			CH0 Reset Coordinates
69		%Q0.4	布尔型	FALSE			CH0 Start
70		%Q0.5	布尔型	FALSE			CH0 Brake
71		%Q0.6	布尔型	TRUE	TRUE		CH0 Home
72		%Q0.7	布尔型	FALSE			CH0 JOG
73		%Q1.0	布尔型	FALSE			CH0 Clear State
74		%Q1.1	布尔型	FALSE			CH0 Set Current Location
75		%Q2.0	布尔型	FALSE			CH1 Running Direction
76		%Q2.1	布尔型	FALSE			CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE			CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE			CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE			CH1 Start
80		%Q2.5	布尔型	FALSE			CH1 Brake
81		%Q2.6	布尔型	FALSE			CH1 Home
82		%Q2.7	布尔型	FALSE			CH1 JOG
83		%Q3.0	布尔型	FALSE			CH1 Clear State
84		%Q3.1	布尔型	FALSE			CH1 Set Current Location
85		%Q4.0	布尔型	FALSE			CH2 Running Direction
86		%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE			CH2 Start
90		%Q4.5	布尔型	FALSE			CH2 Brake
91		%Q4.6	布尔型	FALSE			CH2 Home
92		%Q4.7	布尔型	FALSE			CH2 JOG

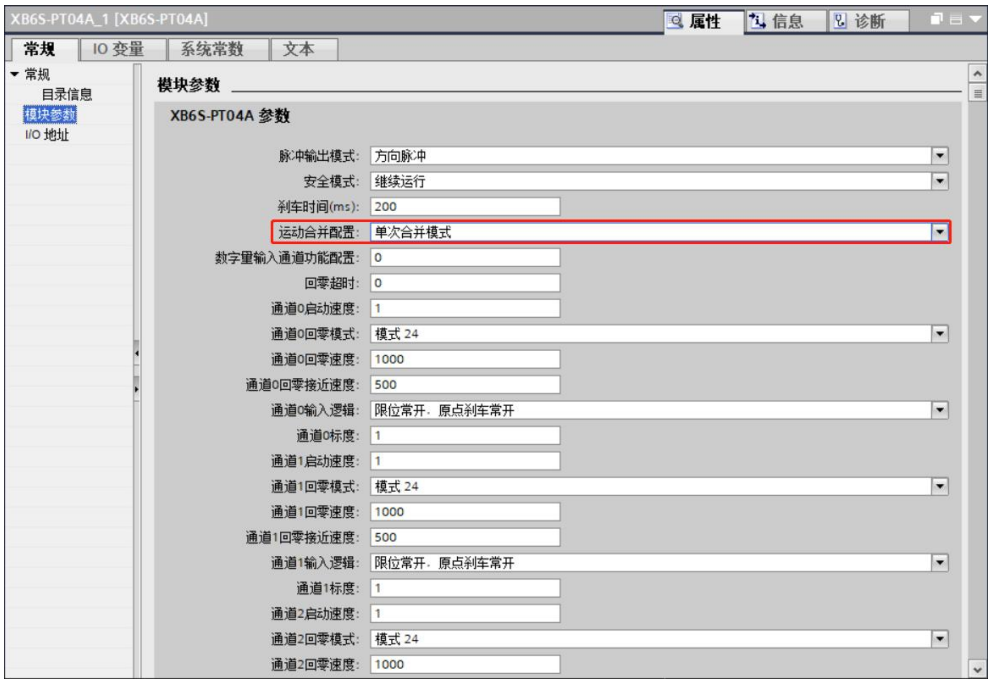
d. homing mode 19 requires input of origin signal. After inputting the origin signal, it decelerates to 0 and moves in the negative direction again at the homing approach speed until the origin signal disappears. Stop moving and homing is completed. You can see that the coordinates of channel 0 are cleared and the homing is set to 1, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
1		%I0.0	布尔型	TRUE		CH0 Pulse Output Direction
2		%I0.1	布尔型	FALSE		CH0 Pulse Status Flag 1
3		%I0.2	布尔型	FALSE		CH0 Pulse Status Flag 2
4		%I0.3	布尔型	FALSE		CH0 Homing Mode Running
5		%I0.4	布尔型	FALSE		CH0 Position Mode Running
6		%I0.5	布尔型	FALSE		CH0 Velocity Mode Running
7		%I0.6	布尔型	TRUE		CH0 Homed
8		%I0.7	布尔型	FALSE		CH0 Location Arrival
9		%I1.0	布尔型	FALSE		CH0 Velocity Arrival
10		%I1.1	布尔型	FALSE		CH0 Positive Limit Signal
11		%I1.2	布尔型	FALSE		CH0 Negative Limit Signal
12		%I1.3	布尔型	FALSE		CH0 Home Signal
13		%I1.4	布尔型	FALSE		CH0 Brake Signal
14		%I2.0	布尔型	FALSE		CH1 Pulse Output Direction
15		%I2.1	布尔型	FALSE		CH1 Pulse Status Flag 1
16		%I2.2	布尔型	FALSE		CH1 Pulse Status Flag 2
17		%I2.3	布尔型	FALSE		CH1 Homing Mode Running
18		%I2.4	布尔型	FALSE		CH1 Position Mode Running
19		%I2.5	布尔型	FALSE		CH1 Velocity Mode Running
20		%I2.6	布尔型	FALSE		CH1 Homed
21		%I2.7	布尔型	FALSE		CH1 Location Arrival
22		%I3.0	布尔型	FALSE		CH1 Velocity Arrival
23		%I3.1	布尔型	FALSE		CH1 Positive Limit Signal
24		%I3.2	布尔型	FALSE		CH1 Negative Limit Signal
25		%I3.3	布尔型	FALSE		CH1 Home Signal
26		%I3.4	布尔型	FALSE		CH1 Brake Signal
27		%I4.0	布尔型	FALSE		CH2 Pulse Output Direction
28		%I4.1	布尔型	FALSE		CH2 Pulse Status Flag 1

- **Channel 0 turns on speed mode, running at 100000Hz, and the speed is changed to 10000Hz during operation**

a. Configure the configuration parameters, such as enabling the single mode in the motion merge mode selection, as shown in the figure below.



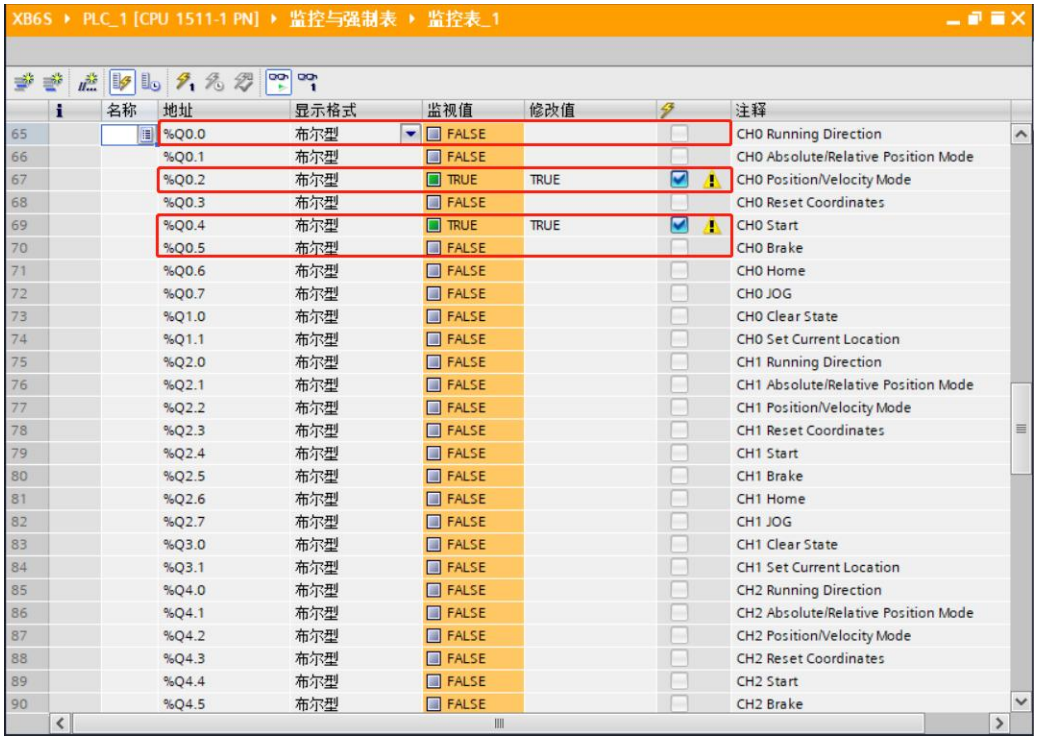
After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

b. Set channel 0 to speed mode;

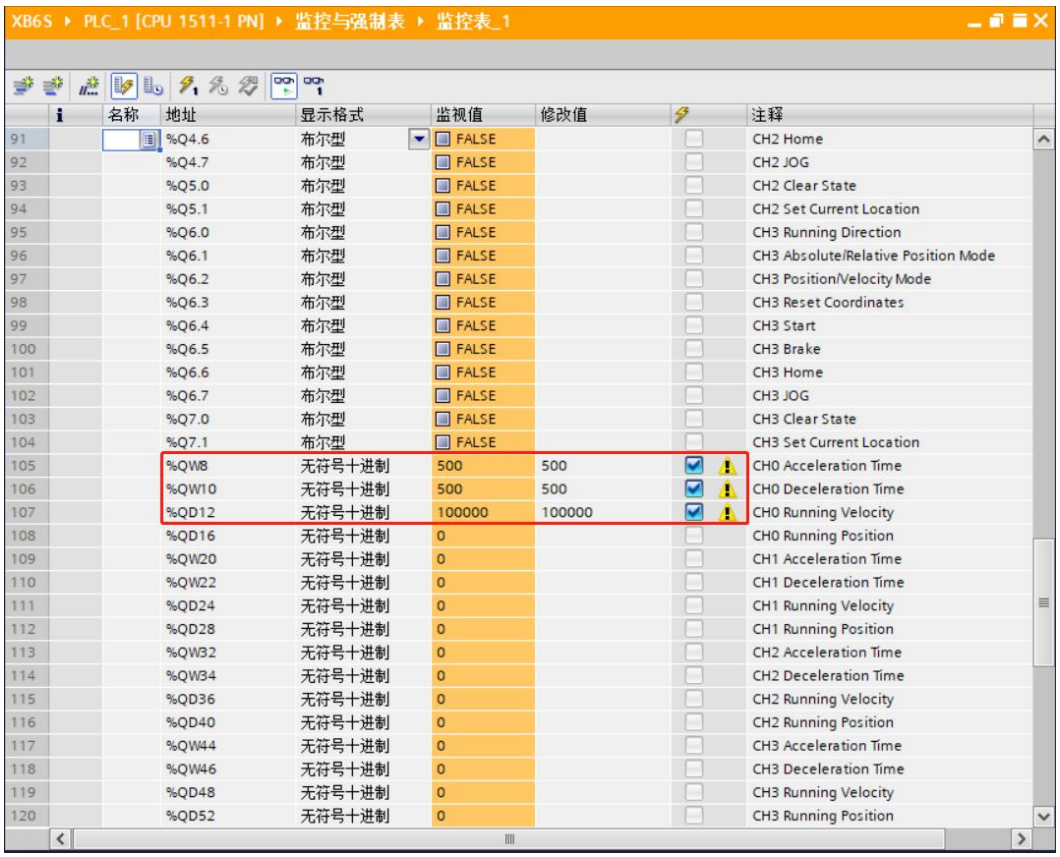
c. Configure channel 0 to run at a speed of 100000Hz, the direction of motion to 0 forward, and the acceleration and deceleration times to 500;

d. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

e. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.



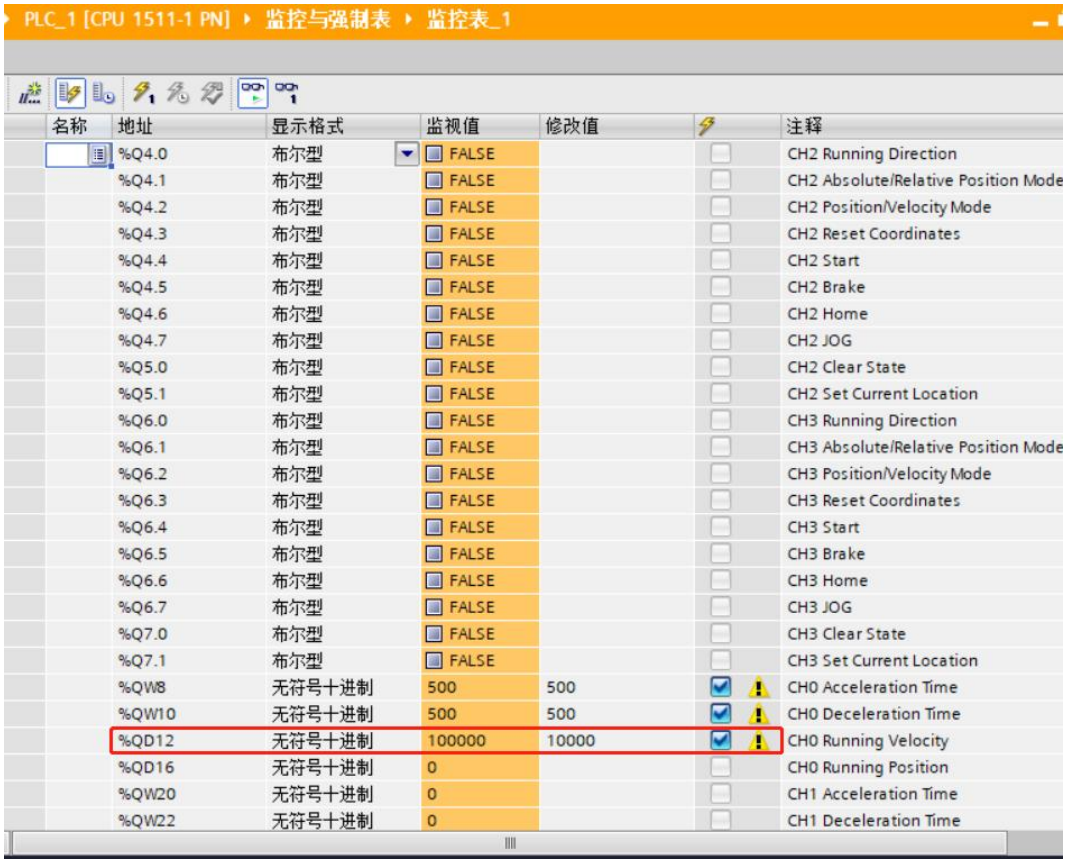
	名称	地址	显示格式	监视值	修改值		注释
65		%Q0.0	布尔型	FALSE			CH0 Running Direction
66		%Q0.1	布尔型	FALSE			CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	TRUE	TRUE		CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE			CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE		CH0 Start
70		%Q0.5	布尔型	FALSE			CH0 Brake
71		%Q0.6	布尔型	FALSE			CH0 Home
72		%Q0.7	布尔型	FALSE			CH0 JOG
73		%Q1.0	布尔型	FALSE			CH0 Clear State
74		%Q1.1	布尔型	FALSE			CH0 Set Current Location
75		%Q2.0	布尔型	FALSE			CH1 Running Direction
76		%Q2.1	布尔型	FALSE			CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE			CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE			CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE			CH1 Start
80		%Q2.5	布尔型	FALSE			CH1 Brake
81		%Q2.6	布尔型	FALSE			CH1 Home
82		%Q2.7	布尔型	FALSE			CH1 JOG
83		%Q3.0	布尔型	FALSE			CH1 Clear State
84		%Q3.1	布尔型	FALSE			CH1 Set Current Location
85		%Q4.0	布尔型	FALSE			CH2 Running Direction
86		%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE			CH2 Start
90		%Q4.5	布尔型	FALSE			CH2 Brake



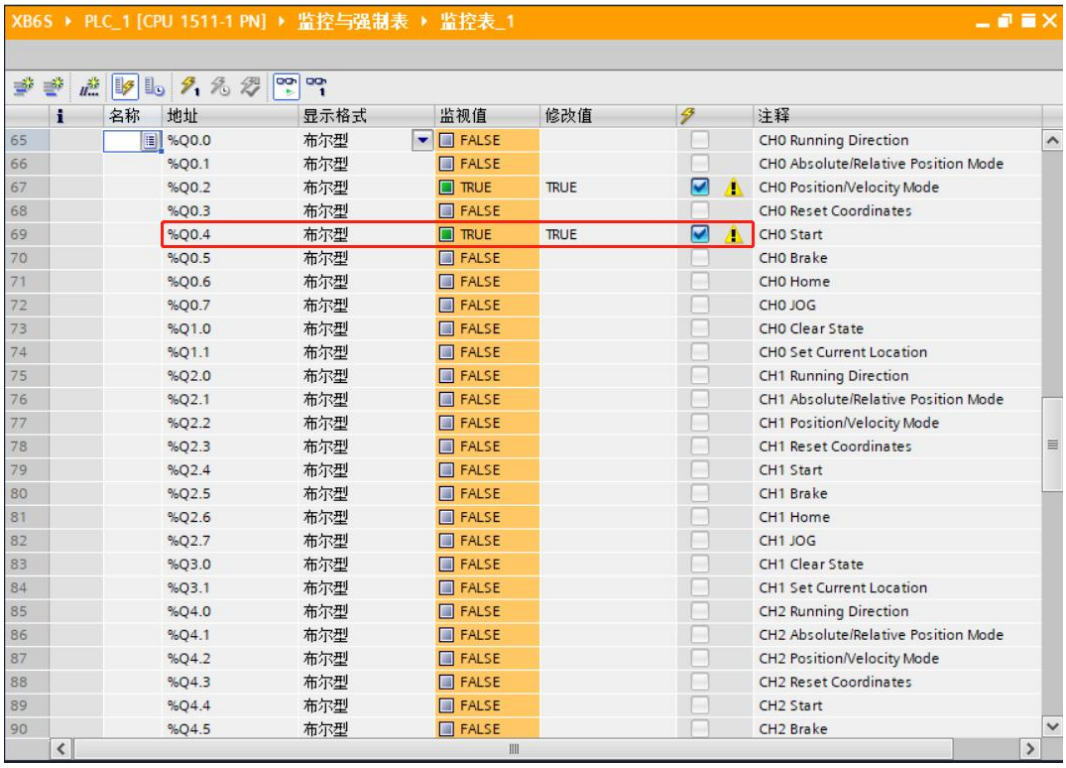
	名称	地址	显示格式	监视值	修改值		注释
91		%Q4.6	布尔型	FALSE			CH2 Home
92		%Q4.7	布尔型	FALSE			CH2 JOG
93		%Q5.0	布尔型	FALSE			CH2 Clear State
94		%Q5.1	布尔型	FALSE			CH2 Set Current Location
95		%Q6.0	布尔型	FALSE			CH3 Running Direction
96		%Q6.1	布尔型	FALSE			CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE			CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE			CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE			CH3 Start
100		%Q6.5	布尔型	FALSE			CH3 Brake
101		%Q6.6	布尔型	FALSE			CH3 Home
102		%Q6.7	布尔型	FALSE			CH3 JOG
103		%Q7.0	布尔型	FALSE			CH3 Clear State
104		%Q7.1	布尔型	FALSE			CH3 Set Current Location
105		%QW8	无符号十进制	500	500		CH0 Acceleration Time
106		%QW10	无符号十进制	500	500		CH0 Deceleration Time
107		%QD12	无符号十进制	100000	100000		CH0 Running Velocity
108		%QD16	无符号十进制	0			CH0 Running Position
109		%QW20	无符号十进制	0			CH1 Acceleration Time
110		%QW22	无符号十进制	0			CH1 Deceleration Time
111		%QD24	无符号十进制	0			CH1 Running Velocity
112		%QD28	无符号十进制	0			CH1 Running Position
113		%QW32	无符号十进制	0			CH2 Acceleration Time
114		%QW34	无符号十进制	0			CH2 Deceleration Time
115		%QD36	无符号十进制	0			CH2 Running Velocity
116		%QD40	无符号十进制	0			CH2 Running Position
117		%QW44	无符号十进制	0			CH3 Acceleration Time
118		%QW46	无符号十进制	0			CH3 Deceleration Time
119		%QD48	无符号十进制	0			CH3 Running Velocity
120		%QD52	无符号十进制	0			CH3 Running Position

f. During the movement, change the running speed of channel 0 to 10000Hz;

g. Reset the start command of channel 0 from 0 to 1 to start motion merging, as shown in the figure below.

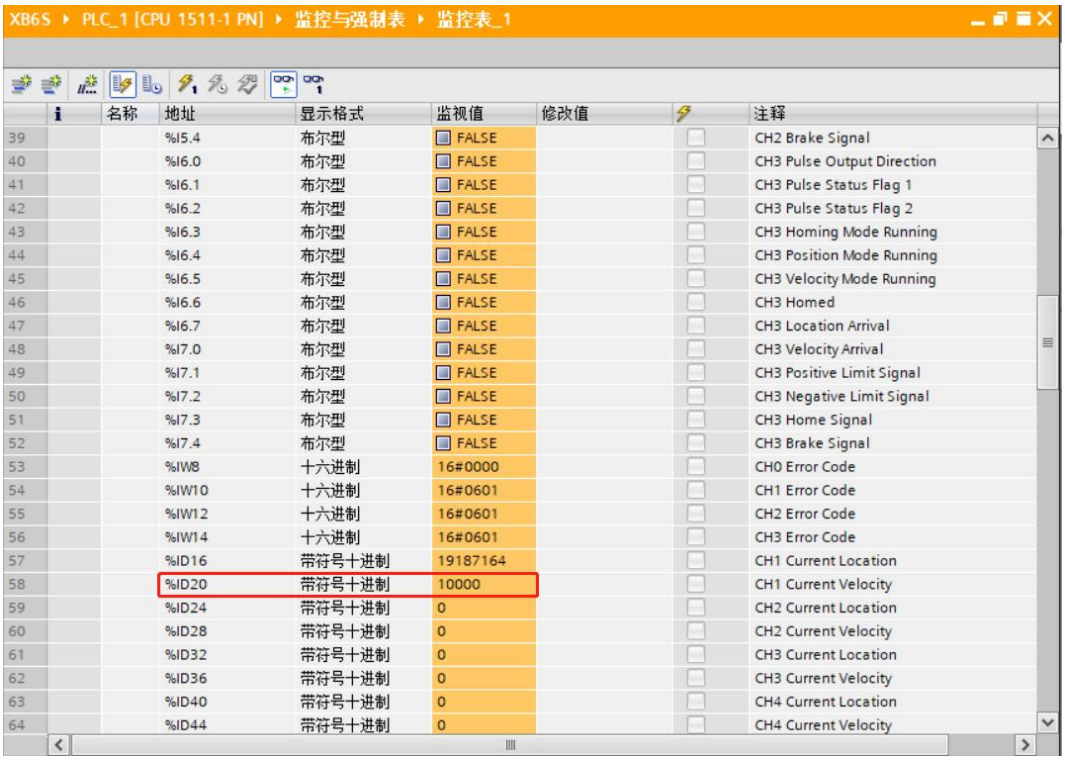


名称	地址	显示格式	监视值	修改值		注释
	%Q4.0	布尔型	FALSE			CH2 Running Direction
	%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
	%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
	%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
	%Q4.4	布尔型	FALSE			CH2 Start
	%Q4.5	布尔型	FALSE			CH2 Brake
	%Q4.6	布尔型	FALSE			CH2 Home
	%Q4.7	布尔型	FALSE			CH2 JOG
	%Q5.0	布尔型	FALSE			CH2 Clear State
	%Q5.1	布尔型	FALSE			CH2 Set Current Location
	%Q6.0	布尔型	FALSE			CH3 Running Direction
	%Q6.1	布尔型	FALSE			CH3 Absolute/Relative Position Mode
	%Q6.2	布尔型	FALSE			CH3 Position/Velocity Mode
	%Q6.3	布尔型	FALSE			CH3 Reset Coordinates
	%Q6.4	布尔型	FALSE			CH3 Start
	%Q6.5	布尔型	FALSE			CH3 Brake
	%Q6.6	布尔型	FALSE			CH3 Home
	%Q6.7	布尔型	FALSE			CH3 JOG
	%Q7.0	布尔型	FALSE			CH3 Clear State
	%Q7.1	布尔型	FALSE			CH3 Set Current Location
	%QW8	无符号十进制	500	500		CH0 Acceleration Time
	%QW10	无符号十进制	500	500		CH0 Deceleration Time
	%QD12	无符号十进制	100000	10000		CH0 Running Velocity
	%QD16	无符号十进制	0			CH0 Running Position
	%QW20	无符号十进制	0			CH1 Acceleration Time
	%QW22	无符号十进制	0			CH1 Deceleration Time



	名称	地址	显示格式	监视值	修改值		注释
65		%Q0.0	布尔型	FALSE			CH0 Running Direction
66		%Q0.1	布尔型	FALSE			CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	TRUE	TRUE		CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE			CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE		CH0 Start
70		%Q0.5	布尔型	FALSE			CH0 Brake
71		%Q0.6	布尔型	FALSE			CH0 Home
72		%Q0.7	布尔型	FALSE			CH0 JOG
73		%Q1.0	布尔型	FALSE			CH0 Clear State
74		%Q1.1	布尔型	FALSE			CH0 Set Current Location
75		%Q2.0	布尔型	FALSE			CH1 Running Direction
76		%Q2.1	布尔型	FALSE			CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE			CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE			CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE			CH1 Start
80		%Q2.5	布尔型	FALSE			CH1 Brake
81		%Q2.6	布尔型	FALSE			CH1 Home
82		%Q2.7	布尔型	FALSE			CH1 JOG
83		%Q3.0	布尔型	FALSE			CH1 Clear State
84		%Q3.1	布尔型	FALSE			CH1 Set Current Location
85		%Q4.0	布尔型	FALSE			CH2 Running Direction
86		%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE			CH2 Start
90		%Q4.5	布尔型	FALSE			CH2 Brake

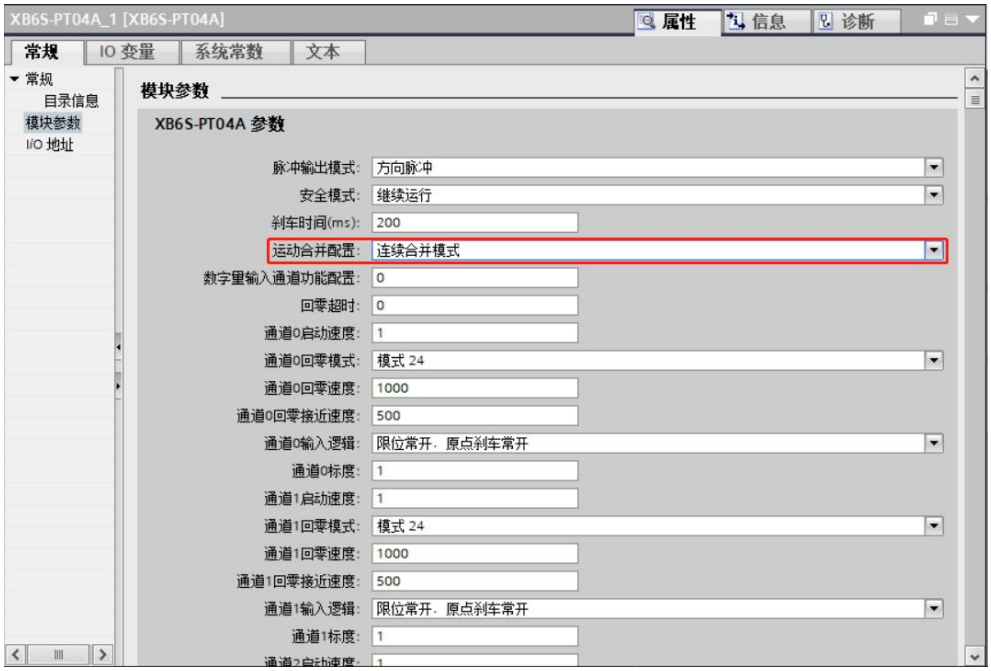
h. You can see that channel 0 slows down to 10000Hz motion, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值	注释
39		%I5.4	布尔型	FALSE		CH2 Brake Signal
40		%I6.0	布尔型	FALSE		CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE		CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE		CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE		CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE		CH3 Position Mode Running
45		%I6.5	布尔型	FALSE		CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE		CH3 Homed
47		%I6.7	布尔型	FALSE		CH3 Location Arrival
48		%I7.0	布尔型	FALSE		CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE		CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE		CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE		CH3 Home Signal
52		%I7.4	布尔型	FALSE		CH3 Brake Signal
53		%IW8	十六进制	16#0000		CH0 Error Code
54		%IW10	十六进制	16#0601		CH1 Error Code
55		%IW12	十六进制	16#0601		CH2 Error Code
56		%IW14	十六进制	16#0601		CH3 Error Code
57		%ID16	带符号十进制	19187164		CH1 Current Location
58		%ID20	带符号十进制	10000		CH1 Current Velocity
59		%ID24	带符号十进制	0		CH2 Current Location
60		%ID28	带符号十进制	0		CH2 Current Velocity
61		%ID32	带符号十进制	0		CH3 Current Location
62		%ID36	带符号十进制	0		CH3 Current Velocity
63		%ID40	带符号十进制	0		CH4 Current Location
64		%ID44	带符号十进制	0		CH4 Current Velocity

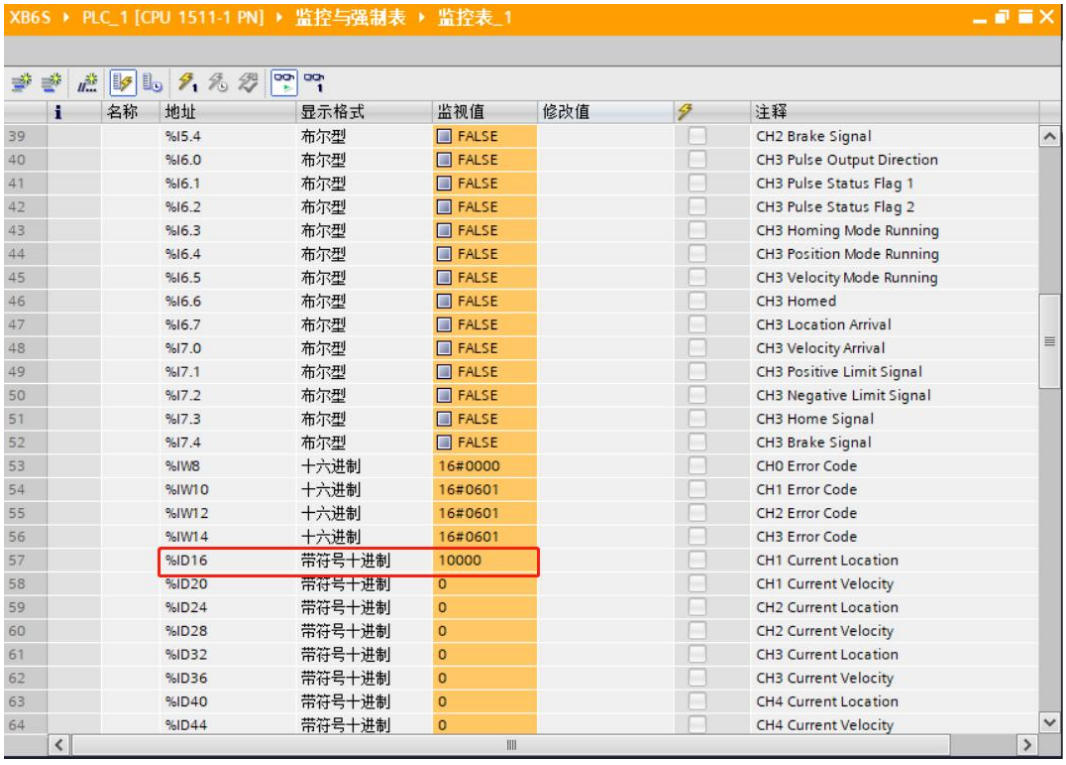
◆ **The current position of channel 0 is 10000, and it moves to the position of 20000. During the movement, the position is changed to 50000.**

a. Configure the configuration parameters, such as the motion merge mode selection to enable the continuous mode, as shown in the figure below.



After all parameters are configured, the program needs to be downloaded to the PLC again, and the PLC and the module need to be powered on again.

b. The current position of channel 0 is 10000, as shown in the figure below.



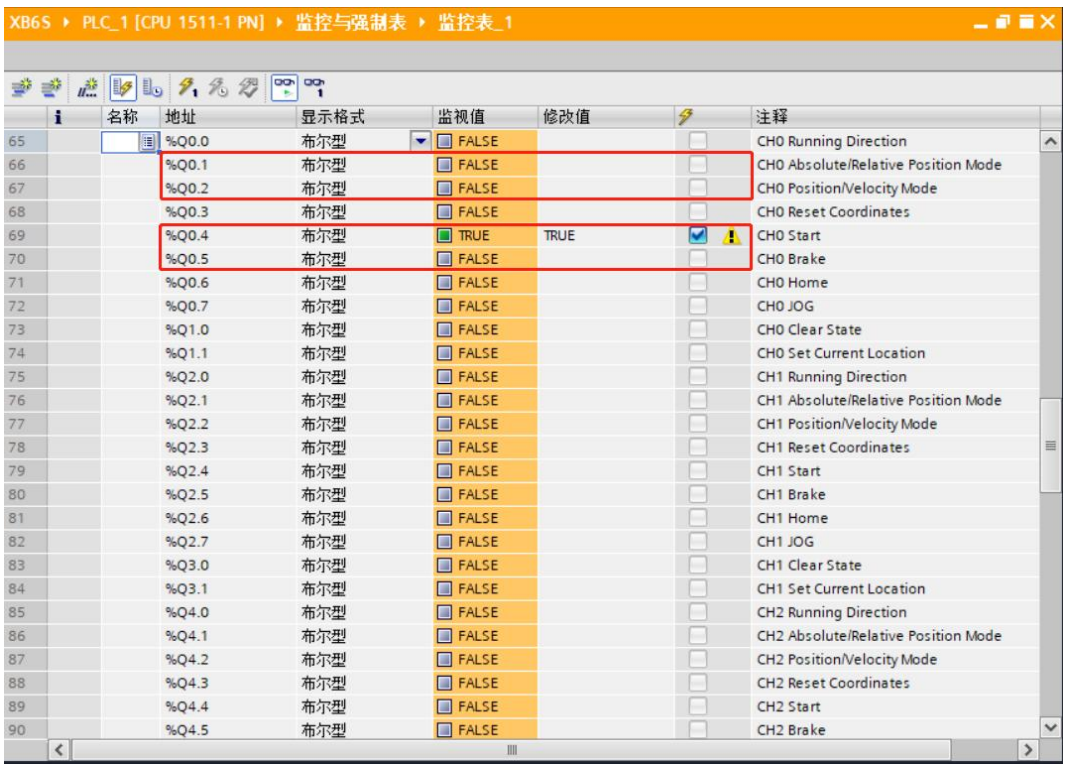
	名称	地址	显示格式	监视值	修改值		注释
39		%I5.4	布尔型	FALSE			CH2 Brake Signal
40		%I6.0	布尔型	FALSE			CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE			CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE			CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE			CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE			CH3 Position Mode Running
45		%I6.5	布尔型	FALSE			CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE			CH3 Homed
47		%I6.7	布尔型	FALSE			CH3 Location Arrival
48		%I7.0	布尔型	FALSE			CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE			CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE			CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE			CH3 Home Signal
52		%I7.4	布尔型	FALSE			CH3 Brake Signal
53		%IW8	十六进制	16#0000			CH0 Error Code
54		%IW10	十六进制	16#0601			CH1 Error Code
55		%IW12	十六进制	16#0601			CH2 Error Code
56		%IW14	十六进制	16#0601			CH3 Error Code
57		%ID16	带符号十进制	10000			CH1 Current Location
58		%ID20	带符号十进制	0			CH1 Current Velocity
59		%ID24	带符号十进制	0			CH2 Current Location
60		%ID28	带符号十进制	0			CH2 Current Velocity
61		%ID32	带符号十进制	0			CH3 Current Location
62		%ID36	带符号十进制	0			CH3 Current Velocity
63		%ID40	带符号十进制	0			CH4 Current Location
64		%ID44	带符号十进制	0			CH4 Current Velocity

c. Set channel 0 to absolute position mode;

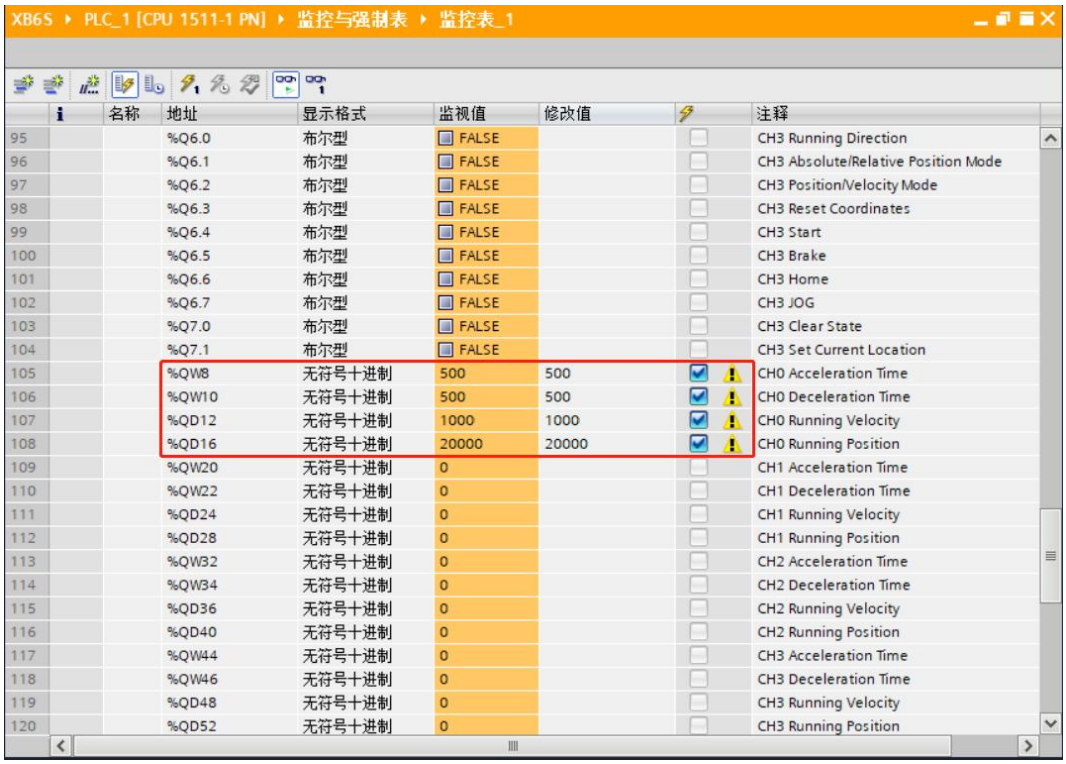
d. Configure channel 0 to run at 20000 steps, 1000 Hz speed, and 500 acceleration and deceleration times;

e. Make sure the brake command of channel 0 is 0 and channel 0 is in a stationary state;

f. Set the start command of channel 0 from 0 to 1 to start motion, as shown in the figure below.

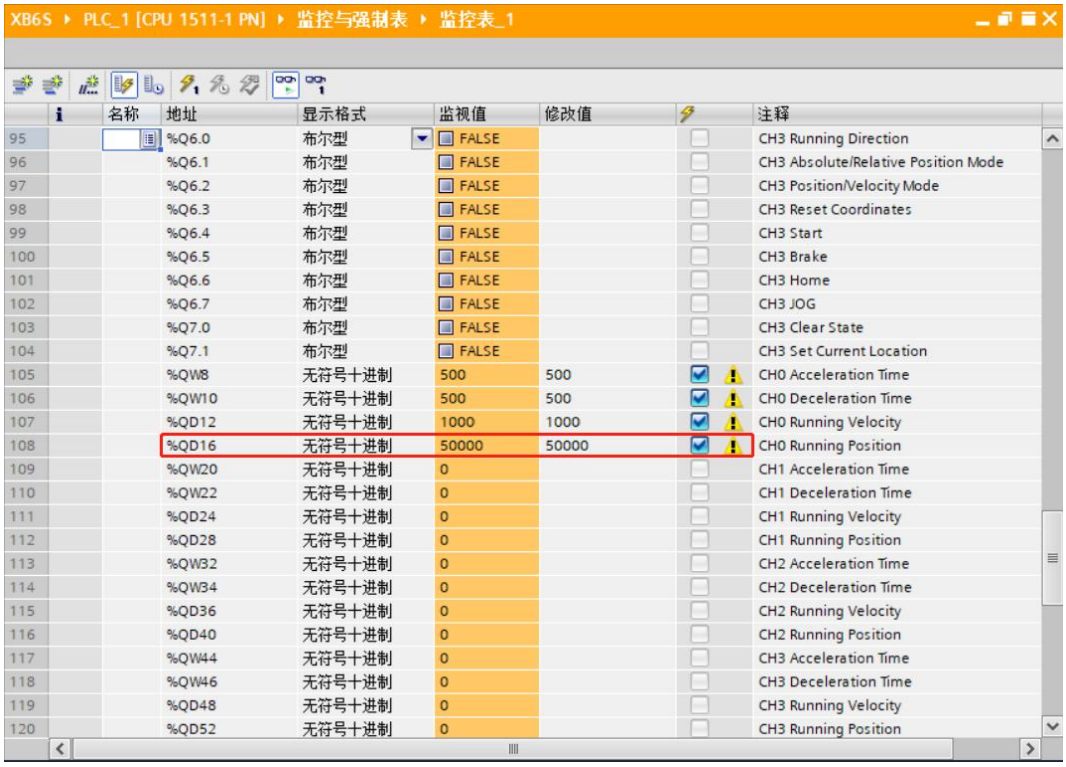


	名称	地址	显示格式	监视值	修改值		注释
65		%Q0.0	布尔型	FALSE			CH0 Running Direction
66		%Q0.1	布尔型	FALSE			CH0 Absolute/Relative Position Mode
67		%Q0.2	布尔型	FALSE			CH0 Position/Velocity Mode
68		%Q0.3	布尔型	FALSE			CH0 Reset Coordinates
69		%Q0.4	布尔型	TRUE	TRUE		CH0 Start
70		%Q0.5	布尔型	FALSE			CH0 Brake
71		%Q0.6	布尔型	FALSE			CH0 Home
72		%Q0.7	布尔型	FALSE			CH0 JOG
73		%Q1.0	布尔型	FALSE			CH0 Clear State
74		%Q1.1	布尔型	FALSE			CH0 Set Current Location
75		%Q2.0	布尔型	FALSE			CH1 Running Direction
76		%Q2.1	布尔型	FALSE			CH1 Absolute/Relative Position Mode
77		%Q2.2	布尔型	FALSE			CH1 Position/Velocity Mode
78		%Q2.3	布尔型	FALSE			CH1 Reset Coordinates
79		%Q2.4	布尔型	FALSE			CH1 Start
80		%Q2.5	布尔型	FALSE			CH1 Brake
81		%Q2.6	布尔型	FALSE			CH1 Home
82		%Q2.7	布尔型	FALSE			CH1 JOG
83		%Q3.0	布尔型	FALSE			CH1 Clear State
84		%Q3.1	布尔型	FALSE			CH1 Set Current Location
85		%Q4.0	布尔型	FALSE			CH2 Running Direction
86		%Q4.1	布尔型	FALSE			CH2 Absolute/Relative Position Mode
87		%Q4.2	布尔型	FALSE			CH2 Position/Velocity Mode
88		%Q4.3	布尔型	FALSE			CH2 Reset Coordinates
89		%Q4.4	布尔型	FALSE			CH2 Start
90		%Q4.5	布尔型	FALSE			CH2 Brake



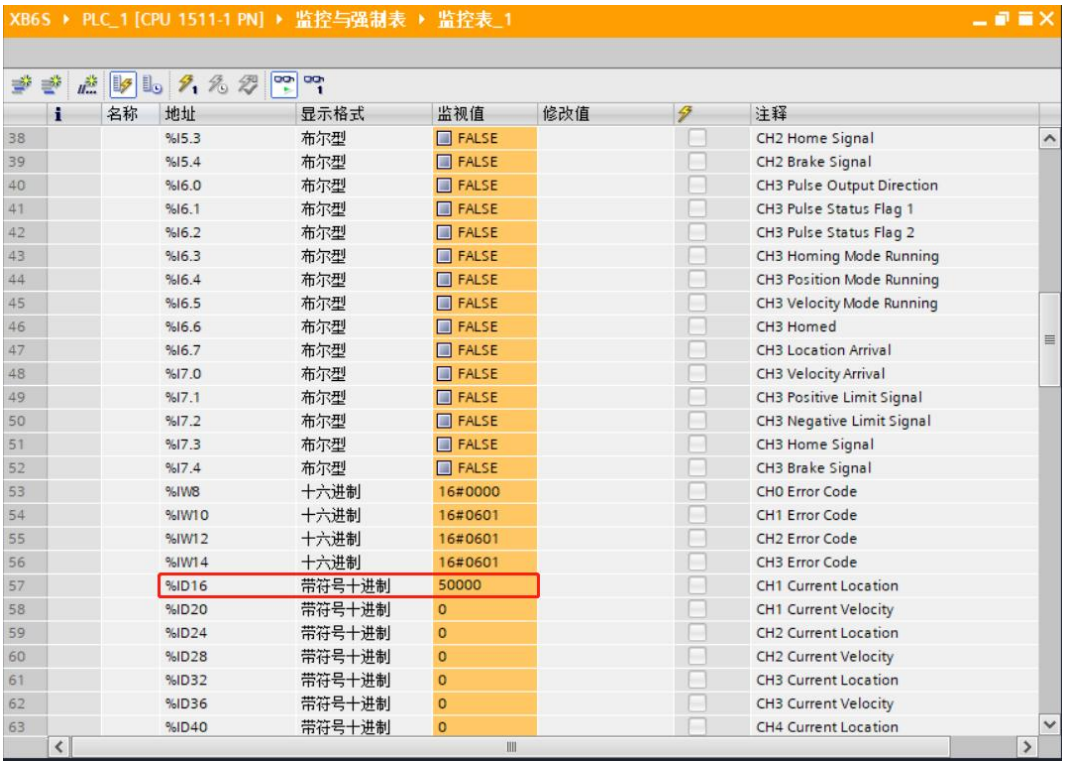
	名称	地址	显示格式	监视值	修改值		注释
95		%Q6.0	布尔型	FALSE			CH3 Running Direction
96		%Q6.1	布尔型	FALSE			CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE			CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE			CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE			CH3 Start
100		%Q6.5	布尔型	FALSE			CH3 Brake
101		%Q6.6	布尔型	FALSE			CH3 Home
102		%Q6.7	布尔型	FALSE			CH3 JOG
103		%Q7.0	布尔型	FALSE			CH3 Clear State
104		%Q7.1	布尔型	FALSE			CH3 Set Current Location
105		%QW8	无符号十进制	500	500	☑	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	☑	CH0 Deceleration Time
107		%QD12	无符号十进制	1000	1000	☑	CH0 Running Velocity
108		%QD16	无符号十进制	20000	20000	☑	CH0 Running Position
109		%QW20	无符号十进制	0			CH1 Acceleration Time
110		%QW22	无符号十进制	0			CH1 Deceleration Time
111		%QD24	无符号十进制	0			CH1 Running Velocity
112		%QD28	无符号十进制	0			CH1 Running Position
113		%QW32	无符号十进制	0			CH2 Acceleration Time
114		%QW34	无符号十进制	0			CH2 Deceleration Time
115		%QD36	无符号十进制	0			CH2 Running Velocity
116		%QD40	无符号十进制	0			CH2 Running Position
117		%QW44	无符号十进制	0			CH3 Acceleration Time
118		%QW46	无符号十进制	0			CH3 Deceleration Time
119		%QD48	无符号十进制	0			CH3 Running Velocity
120		%QD52	无符号十进制	0			CH3 Running Position

g. During the motion process, change the running step number of channel 0 to 50000 and start motion merging, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值		注释
95		%Q6.0	布尔型	FALSE			CH3 Running Direction
96		%Q6.1	布尔型	FALSE			CH3 Absolute/Relative Position Mode
97		%Q6.2	布尔型	FALSE			CH3 Position/Velocity Mode
98		%Q6.3	布尔型	FALSE			CH3 Reset Coordinates
99		%Q6.4	布尔型	FALSE			CH3 Start
100		%Q6.5	布尔型	FALSE			CH3 Brake
101		%Q6.6	布尔型	FALSE			CH3 Home
102		%Q6.7	布尔型	FALSE			CH3 JOG
103		%Q7.0	布尔型	FALSE			CH3 Clear State
104		%Q7.1	布尔型	FALSE			CH3 Set Current Location
105		%QW8	无符号十进制	500	500	☑	CH0 Acceleration Time
106		%QW10	无符号十进制	500	500	☑	CH0 Deceleration Time
107		%QD12	无符号十进制	1000	1000	☑	CH0 Running Velocity
108		%QD16	无符号十进制	50000	50000	☑	CH0 Running Position
109		%QW20	无符号十进制	0			CH1 Acceleration Time
110		%QW22	无符号十进制	0			CH1 Deceleration Time
111		%QD24	无符号十进制	0			CH1 Running Velocity
112		%QD28	无符号十进制	0			CH1 Running Position
113		%QW32	无符号十进制	0			CH2 Acceleration Time
114		%QW34	无符号十进制	0			CH2 Deceleration Time
115		%QD36	无符号十进制	0			CH2 Running Velocity
116		%QD40	无符号十进制	0			CH2 Running Position
117		%QW44	无符号十进制	0			CH3 Acceleration Time
118		%QW46	无符号十进制	0			CH3 Deceleration Time
119		%QD48	无符号十进制	0			CH3 Running Velocity
120		%QD52	无符号十进制	0			CH3 Running Position

h. After the movement is completed, you can see that the current coordinate of channel 0 is 50000, as shown in the figure below.



	名称	地址	显示格式	监视值	修改值		注释
38		%I5.3	布尔型	FALSE			CH2 Home Signal
39		%I5.4	布尔型	FALSE			CH2 Brake Signal
40		%I6.0	布尔型	FALSE			CH3 Pulse Output Direction
41		%I6.1	布尔型	FALSE			CH3 Pulse Status Flag 1
42		%I6.2	布尔型	FALSE			CH3 Pulse Status Flag 2
43		%I6.3	布尔型	FALSE			CH3 Homing Mode Running
44		%I6.4	布尔型	FALSE			CH3 Position Mode Running
45		%I6.5	布尔型	FALSE			CH3 Velocity Mode Running
46		%I6.6	布尔型	FALSE			CH3 Homed
47		%I6.7	布尔型	FALSE			CH3 Location Arrival
48		%I7.0	布尔型	FALSE			CH3 Velocity Arrival
49		%I7.1	布尔型	FALSE			CH3 Positive Limit Signal
50		%I7.2	布尔型	FALSE			CH3 Negative Limit Signal
51		%I7.3	布尔型	FALSE			CH3 Home Signal
52		%I7.4	布尔型	FALSE			CH3 Brake Signal
53		%IW8	十六进制	16#0000			CH0 Error Code
54		%IW10	十六进制	16#0601			CH1 Error Code
55		%IW12	十六进制	16#0601			CH2 Error Code
56		%IW14	十六进制	16#0601			CH3 Error Code
57		%ID16	带符号十进制	50000			CH1 Current Location
58		%ID20	带符号十进制	0			CH1 Current Velocity
59		%ID24	带符号十进制	0			CH2 Current Location
60		%ID28	带符号十进制	0			CH2 Current Velocity
61		%ID32	带符号十进制	0			CH3 Current Location
62		%ID36	带符号十进制	0			CH3 Current Velocity
63		%ID40	带符号十进制	0			CH4 Current Location