

XB6-P20D

Encoder Count Module

User Manual



Nanjing Solidot Electronic Technology Co., LTD

Copyright © Nanjing Solidot Electronic Technology Co., LTD. 2023. All rights are reserved.

Without the written permission of the Company, no unit or individual shall copy or copy part or all of the contents of this document, and shall not disseminate it in any form.

Trademark statement

And other Solidot trademarks are the trademarks of Nanjing Solidot Electronic Technology Co.,

LTD.

All other trademarks or registered trademarks referred to in this document are owned by their respective owners.

Attention

The products, services or features you purchase shall be subject to the business contract and terms of the Company, and all or part of the products, services or features described in this document may not be covered by your purchase or use. Unless otherwise agreed in the Contract, we shall make no express or implied representation or warranty about the content of this document.

The content of this document will be updated irregularly due to the product version upgrade or other reasons. Unless otherwise agreed, this document is only serve as a guide for use, and all statements, information and suggestions in this document do not constitute any warranty, express or implied.

Nanjing Solidot Electronic Technology Co., LTD Address: 11 / F, Angying Building, No.91, Shengli Road, Jiangning District, Nanjing city, Jiangsu Province Postcode: 211106 Tel.: 4007788929 URL:<u>http://www.solidotech.com</u>

Catalogue

1	Produc	t overview1
	1.1	Product profile
	1.2	product features
2	Produc	t Parameter
	2.1	General parameters
3	Panel.	
	3.1	Modular architecture
	3.2	Indicator light function5
4	Installa	tion and disassembly6
	4.1	Outline dimension
	4.2	Installation guide
	4.3	Install the disassembly step
	4.4	Schematic diagram of installation
5	Wiring	
	5.1	Hookup
	5.2	Definition of wiring terminal13
6	Make	use of
	6.1	Process data15
	6.2	Configuration parameter definition
	6.3	Use the case
	6.4	Module configuration description25
	6.4.1	Application in the TwinCAT3 software environment25
	6.4.2	Application in the TIA Portal V14 software environment
	6.4.3	Application in the CODESYS V3.5 software environment45

1 Product overview

1.1 Product profile

XB 6-P20D for XB6 series encoder counting module, using the X-bus bottom bus, bus module supports two orthogonal encoder signal input, ring count, Z phase reset, four latch channel can be any collocation, fit the company XB 6 series coupler module, module small space, high real-time, for user high speed data acquisition, optimize system configuration, simplify the field wiring, improve system reliability provides various options.

1.2 product features

- binary channels
 Two-channel encoders are supported.
- Linear counts
 Support for a 32-bit linear count of 0~4294967295.
- Count the fold rate
 Support for 4 x / 2 x / 1 x count.
- Hardware lock storage
 Four latch channels can be configured arbitrarily.
- Z phase zero Automatic empty count value at a specific pulse.
- small volume
 Compact structure, small space occupancy.
- fast speed
 Based on the high-performance communication chip, parallel interface, fast speed.
- Easy diagnosis
 Innovative channel indicator light design, close to the channel, clear at a glance, convenient detection and maintenance.
- Easy configuration

The configuration, simple configuration, support PROFINET main station, EtherCAT main station, Ether N et / IP main station and other major mainstream main stations.

Easy to install

DIN 35 mm Standard guide rail installation

Using shrapnel type wiring terminal, wiring is convenient and fast.

2 Product Parameter

2.1 General parameters

interface parameters			
product model	XB6-P20D		
bus protocol	X-b us		
Process data volume: Downlink	12 Bytes		
Process data volume: uplink	20 Bytes		
figure IO	Input: 4 Ch , PNP/NPN	Output: 4 Ch , PNP	
refresh rate	1 ms		
technical parameter			
Encoder input	2 channel		
Encoder signal	orthogonal		
count rate	≤500 kHz		
Z phase zero	support		
Hardware lock-in function	Latch signal is configurable		
Compare output functions	Unsupported for the time being		
Counting fold rate setting	4 x / 2 x / 1 x (default 4 x)		
Resolution Settings	Support, 0~65535 (default 0)		
Ring count	Supported, 0 to resolution count	fold-1	
Linear counts	Support, 0~4294967295		
Count the initial value setting	support		
Hardware filtering	Support, 0~15 (default 7)		
Count range selection	Support, 0~4294967295		
counting in reverse	support		
outline dimension	106×73×25.7mm		
weight	100g		
mode of connection	Screw-free quick plug in		
way to install	35mm guide rail installation		

3 Panel

3.1 modular architecture

Name of the product parts



3.2 Indicator light function

name	characteristic	pigment	state	state description
power light	D	aroon	Often bright	The power supply is normal
poweringni	P	green	ovtinct	The product is not powered on or the
			extinct	power supply is abnormal
			Often	The system is running normally
			bright	
Communication	R	areen	Slim 1Hz	The module is connected and the X-bus
indicator light		green		system is ready for interact
			evtinct	Device was not powered, X-bus did not
			extinct	interact with data or abnormal
Encoder to	$\Delta + / \Delta_{-}$	areen	Often	The encoder has enabled
input the AB			bright	
phase indicator light	B +/B-	green	extinct	The encoder is not able to make
Encoder input Z			Often	The encoder Z-phase reset function is
phase indicator	Z +/Z-	aroon	bright	enabled
light		green	extinct	The encoder Z-phase reset function is not enabled
Input the			Often	The channel has a signal input
channel	10~13	areen	bright	The charmer has a signal input
indicator light	10-15	green	extinct	The channel has no input or abnormal
			CAUNCE	signal input
			Often	The channel has a signal output
Output channel	00~03	areen	bright	
indicator light		gicen	extinct	Channel has no output or abnormal signal
			extinet	output

4 Installation and disassembly

4.1 outline dimension

Outline specification (in mm)



4.2 Installation guide

Installation \ Removal considerations

- Ensure that the cabinet has good ventilation measures (such as the cabinet with exhaust fans).
- Do not install this equipment next to or above the equipment that may cause overheating.
- Be sure to install the module vertically and maintain the surrounding air circulation (at least 50mm of air circulation space above and below the module).
- After the module is installed, always install the guide rail fittings at both ends to secure the module.

• The disassembly must be done when the power supply is cut off.

Minimum clearance (50mm)

Ensure that the module is installed vertically



Be sure to install the guide rails and fittings



4.3 Install the disassembly step

Assembly and remova	Assembly and removal of the module					
Module installation	1. Install the power supply module on the fixed guide rail first.					
steps	2. Install the coupler and the required I / O module on the right side of the					
	power supply module.					
	3. After installing all the required I / O modules, install the end cover to					
	complete the assembly of the module.					
	4. Install guide rail fixings at both ends of the power supply module and end					
	cover to fix the module.					
Module disassembly	1. Release the guide rail attachment parts at both ends of the module.					
step	2. Use a one-word screwdriver to pry open the module buckle.					
	3. Pull out the disassembled module.					

4.4 Schematic diagram of installation

Power supply module installation step Image: Constrained on the stallation Vertical align the rail of the power module as shown in Figure ① on the left. Image: Constrained on the stallation As shown in the ② on the left, press the power module and hear the "click" sound, the module is installed in place.

2

Installation of the coupler module



step

Aign the left slot of the coupler module to the right side of the power module as shown in Figure ③ on the left.

Press hard, the coupler module, hear the "click" sound, the module is installed in place.

The I / O module installation



step

Follow the steps of installing the coupler module in the previous step, and install the required I / O modules one by one, as shown in Figure ④ and Figure ⑤ on the left.

4



(5)





9

Release the rail holder at one end of the module with a screwdriver and remove it to one side to ensure that there is a gap between the module and the rail holder, as shown in Figure (9) on the left.



Insert the word flat head into the buckle of the module to be removed and force in the direction of the lateral module (hear noise) as shown in the @ and ① on the left.

Note: Each module has a buckle on each level, and they all operate according to this method.

(10)



Follow the installation module and remove the module as shown in the ⁽¹⁾ on the left.

11

5 wiring

Π

5.1 hookup



*24V内部导通:0V内部导通 *CI为输入通道I0~I3的公共端,内部导通;NPN/PNP兼容 *负载公共端电源需与模块使用同一个电源

• For the safety of people and equipment, it is recommended to disconnect the power supply during wiring operation.

5.2 Terminal terminal termination definition

	СН 0						
Terminal serial number	Terminal identification	explain	Terminal serial number	Terminal identification	explain		
1	A +	Encoder A trust number input +	9	A -	Encoder A credit number output-		
2	B+	Encoder B trust number input +	10	В-	Encoder B credit number output-		
3	Z +	Encoder Z credit number input +	11	Z -	Encoder Z credit number output-		
4	5V	The 5V encoder power supply	12	0V	The 0V encoder power supply		
5	10	Numeric quantity input channel 0	13	CI	Input the channel common end		
6	11	Digit quantity input channel 1	14	CI	Input the channel common end		
7	00	Digital quantity output channel 0	15	NC	Empty terminal		
8	O 1	Digital quantity output channel 1	16	NC	Empty terminal		
		C	H 1				
Terminal serial number	Terminal identification	explain	Terminal serial number	Terminal identification	explain		
1	A+	Encoder A trust number input +	11	A-	Encoder A credit number output-		
2	B+	Encoder B trust number input +	12	В-	Encoder B credit number output-		
3	Z +	Encoder Z credit number input +	13	Z -	Encoder Z credit number output-		
4	5V	The 5V encoder power supply	14	0V	The 0V encoder power supply		
5	12	Digital quantity input channel 2	15	CI	Input the channel common end		
6	13	Digital quantity input channel 3	16	CI	Input the channel common end		

7	02	Digital quantity output channel 2	17	NC	Empty terminal
8	O3	Digital quantity output channel 3	18	NC	Empty terminal
9	+	24V	19	+	24V
10	-	0V	20	-	0V

6 Make use of

6.1 process data

		Upink data 20Bytes			
BITARR	Var Name	Var Content	D atatype	A ccess	Length
0	Latch0 Valid	Encoder 1: The probe input is valid	B OOL	RO	1b
1	Latch1 Valid	Encoder 2: The probe input is valid	B OOL	RO	1b
2	SetCounter0_Finished	Encoder 1: Initial value setting is complete	B OOL	RO	1b
3	SetCounter1_Finished Encoder 2: Initial value setting is complete		B OOL	RO	1b
4	Compare0_valid	Encoder 1: compare output valid	B OOL	RO	1b
5	Compare1_valid	Encoder 2: compare the output is valid	B OOL	RO	1b
6	CounterDir0	Encoder 1: Count direction	B OOL	RO	1b
7	CounterDir1	Encoder 2: Count direction	B OOL	RO	1b
8	Mutiple 0 error	Encoder 1: times rate error	B OOL	RO	1b
9	Mutiple1 error	Encoder 2: times rate error	B OOL	RO	1b
10	Frequency0 error	Encoder 1: wrong frequency	B OOL	RO	1b
11	Frequency1 error	Encoder 2: wrong frequency	B OOL	RO	1b

12~15	Reserved	obligate	B OOL	RO	1b
16	Counter Value0	Encoder 1: Count value	UDINT	RO	4B
17	Counter Value1	Encoder 2: Count value	UDINT	RO	4B
18	Latch Value0	Encoder 1: Latch value	UDINT	RO	4B
19	Latch Value1	Encoder 2: Latch value	UDINT	RO	4B
20	DI	Quantity input	BOOL	RO	2B

	Downlink data is 12B yte s						
BITARR	Var Name	Var Content	D atatype	A ccess	Length		
0	Latch0_Enable	Encoder 1: Latch is enabled	B OOL	RW	1b		
1	Latch1_Enable	Encoder 2: Latch is enabled	B OOL	RW	1b		
2	Z Phase0_Enable	Encoder 1: Z phase zero-enabled	B OOL	RW	1b		
3	Z Phase1_Enable	Encoder 2: Z phase zero enabled	B OOL	RW	1b		
4	Compare0_Enable	Encoder 1: Compare output enable	B OOL	RW	1b		
5	Compare1_Enable	Encoder 2: Compare the output to enable it	B OOL	RW	1b		
6	Counter0Dir_Inv	Encoder 1: counting direction reversal	B OOL	RW	1b		
7	Counter1Dir_Inv	Encoder 2: counting direction reversal	B OOL	RW	1b		
8	ENC_Enable0	Encoder 1: Encoder enables	B OOL	RW	1b		
9	ENC_Enable1	Encoder 2: Encoder enables	B OOL	RW	1b		
10	POWER_LOSS_HOLD0_ENABLE	Encoder 1: power power enabled	B OOL	RW	1b		
11	POWER_LOSS_HOLD1_ENABLE	Encoder 2: drop power saving enabled	B OOL	RW	1b		
12	CLEAR_VALUE0	Encoder 1: count zero	B OOL	R W	1b		
13	CLEAR_VALUE1	Encoder 2: zero zero	B OOL	RW	1b		
10~15	Reserved	obligate	B OOL	RW	1b		
16	Set Counter0 Value	Encoder 1: Initial value setting	UDINT	RW	4B		
17	Set Counter 1 Value	Encoder 2: Initial value setting	UDINT	RW	4B		
18	DO	Digital quantity output / PNP	BOOL	RW	2B		

data specification:

name	description	span	meaning
		0	Encoder invalid latch, L atchVal
Latch Valid	Latch signal active bit of the		invalid content
	encoder ^[1]	1	Encoder valid latch, L atchVal
			content valid
		0	Encoder initialization value setting
SetCounter	The encoder initialization	-	is invalid / not set
Finished	value sets the valid value ^[1]	1	The encoder initialization value
			setting is valid
	The encoder compares the	0	Encoder not enabled to compare
Compare valid	output of the valid bits ^[1]	-	output / no valid output
		1	The encoder has a valid output
CounterDir	Encoder count direction	0	corotation
		1	reversal
Mutiple error	Encoder multiplier set	0	Encoder multiplier setting is correct
	error ^[1]	1	Encoder multiplier set error
	Encoder frequency set	0	Encoder frequency setting is
Frequency error	error ^[1]	0	correct
	enor	1	Encoder frequency set error
Counter Value	Coder gauge values	[0~2 ³² -1]	Capture and save the count value
	Codel gauge values	[0~2 -1]	at some time.
Latch Value	Encodor latch count value	[0.,2 ³² -1]	Capture and save the latch count
		[0~2 -1]	value at some time.
	When the corresponding	0	Invalid input signal
וח	channel input signal is valid,		
	the position 1 is 0 when the	1	The input signal is valid
	input is invalid.		
Latch Enable	The latch function of the	0	forbidden
	encoder enables the	1	start using
Z Phase Enable	The Encoder Z-phase	0	forbidden
	function is enabled	1	start using
Compare Enable	Encoder comparison output	0	forbidden
	enables	1	start using
Counter Dir_Inv	The encoder counts in the	0	forward direction
	reverse direction and	1	opposite direction
	enables it		
ENC_Enable	Encoder count enables	0	cease
		1	firing
POWER_LOSS_HOL	The power is saved to enable	0	forbidden
D_ENABLE		1	start using

CLEAR_VALUE	Calculate the value of zero	0	forbidden
		1	start using
Set Counter Value	The encoder count value		Set the initial value, and after
	sets the initialization value	[0~2 ³² -1]	starting the count, start the count
			from the initialization value
DO	When the corresponding	0	The output signal is invalid
	channel output signal is	1	The output signal is valid
	valid, the position 1 is zero		
	when the output is invalid.		

Note [1]: The encoder probe input effective mark Latch Valid, the encoder initial value setting completion mark SetCounter Finished, the encoder compares the output effective mark Compare valid, the encoder, the ratio error mark Mutiple error, the encoder, the frequency error mark Frequency error function is not supported.

6.2 Configuration parameter definition

Configuration parameter 72 Byte						
BITARR	Var Name	Var Content	D atatype	A ccess	Length	
0	Encoder1 Resolution	Encoder 1 resolution	UDINT	R W	2B	
1	Encoder2 Resolution	Encoder 2 resolution	UDINT	R W	2B	
2	Encoder1 Filter	Encoder 1 filter	UDINT	RW	2B	
3	Encoder2 Filter	Encoder 2 filter	UDINT	RW	2B	
4	Encoder1 Count Multiples	Encoder 1 count multiplier	UDINT	RW	2B	
5	Encoder2 Count Multiples	Encoder 2 count multiplier	UDINT	RW	2B	
6	Encoder1 Count Range	Encoder 1 count range	UDINT	R W	2B	
7	Encoder2 Count Range	Encoder 2 count range	UDINT	RW	2B	
8	Encoder1 Latch Signal	Encoder 1 latch signal	UDINT	RW	2B	
9	Encoder2 Latch Signal	Encoder 2 latch signal	UDINT	RW	2B	

data specification:

name	description	Wind ows defaul t	span	meaning
Encoder1 Resolution	Encoder 1 resolution	0	0~65535	This parameter can achieve the maximum (0~65535 * 4) range ring count
Encoder2 Resolution	Encoder 2 resolution	0	0~65535	This parameter can achieve the maximum (0~65535 * 4) range ring count
Encoder1 Filter	Encoder 1 filter	7	0~15	This parameter can set the encoder filter parameter
Encoder2 Filter	Encoder 2 filter	7	0~15	This parameter can set the encoder filter parameter
Encoder1 Count Multiples	Encoder 1 Itiples count 4 multiplier		1~4	This parameter achieves 4 / 2 / 1 fold count with default 4 fold count
Encoder2 Count Multiples	Encoder 2 count multiplier	4	1~4	This parameter achieves 4 / 2 / 1 fold count with default 4 fold count
	Freedor 1		0	Counting range: 0~4294967295
Encoder1 Count Range	count range	0	1	counter range: -2147483648~+21474836487 ^[2]
Encodor? Count Pango	Encoder 2	0	0	Counting range: 0~4294967295
Littoderz count Range	count range		1	counter range: -2147483648~+21474836487 ^[2]
			1	l 0 multiplexes the latch trigger channel of the encoder 1
	Encoder 1		2	I 1 multiplexes the latch trigger channel of the encoder 1
Encoder1 Latch Signal	latch signal	0	4	I 2 multiplexes the latch trigger channel of the encoder 1
			8	I 3 multiplexes the latch trigger channel of the encoder 1
Encoder2 Latch Signal	Encoder 2 latch signal	0	1	I 0 multiplexes the latch trigger channel of the encoder 2

		2	I 1 multiplexes the latch trigger
		2	channel of the encoder 2
	2	4	I 2 multiplexes the latch trigger
		4	channel of the encoder 2
		0	I 3 multiplexes the latch trigger
		Ö	channel of the encoder 2

Note [2]: Coder count range Encoder Count Range temporarily does not support count range-2147483648~ + 21474836487.

6.3 Use the case

♦ tally function

ENC _ Enablex (x: 0-1 represents the encoder channel, the same below) is set to 1, start the encoder count, under the default parameters, the module is in

[0,4294967295] counting in range, with the counting value being feedback in Counter Valuex in ascending data, and counting direction in Count er Dirx.

Note: In the initial use, note the A / B wiring sequence, the reverse count value will overflow from 0 to 4294967295. In this state (excluding multiple overflow), the actual number of pulses = the number of pulses displayed in 4294967296.

Z phase zero function

The Z phase zero function is not turned on by default. By setting Z Phasex_Enable to 1, the counter Z phase zero function is enabled. For the application scenario with mechanical zero, the count value can be automatically emptied under a specific pulse, and the count value can be fed in Counter Valuex in the uplink data.

Set the counting direction

When CounterxDir _ Inv is set to 1, you can change the original counting direction of the encoder. For example, the original counting direction is increased clockwise, and the counting direction becomes decreased downward when the other conditions remain unchanged.

Initialize the setting function

Setting Set Counterx Value can modify the counter starting value, for example, set Set Counterx Value to 1000. After the count is started, the count value will increase / decrease from 1000.

Ring counting function

The resolution parameter Encoderx Resolution of the configuration parameter encoder is set, for example, set the resolution Encoderx Resolution is 400 and the count rate Encoder x Count Multiples is 4, then the encoder count range is within [0,1600-1], and the resolution parameter Encoderx Resolution is set by default to 0, and the ring count function is not started.

Hardware lock-in function

Setting the latch channel Encoderx Latch Signal of the configuration parameter encoder, for example, setting Encoder1 Latch Signal to 15, means that the encoder enables I0, I1, I2, I3, and the encoder 2 does not enable the latch channel. Encoder 1 and encoder 2 cannot open the same latch channel, namely Encoder1 Latch Signal & Encoder2 Latch Signal=0.

The hardware latch function is activated by setting Latchx_Enable to 1.

Note: This parameter setting should be set before counting the enabling parameter ENC _ Enablex.

When the count is valid during operation, with the active level in the latch signal, the current count value is Counter Valuex latch and hold, and the latch value is feedback in the Latch Valuex of the uplink data.

• Encoder input module function configuration for example

a) Locking function:

Encoder1 Latch Signal Is set to 7; Encoder2 Latch Signal is set to 8; indicates that encoder 1 enables I0, I1, I2 latch channels, and encoder 2 enables I3 latch channel. Encoder 1 and encoder 2 cannot open the same latch channel, that is, the Encoder1 Latch Signal & Encoder2 Latch Signal is 0. ② Ring counting function:

Encoderx Resolution Is set to 1000; Encoderx Count Multiples is set to 4; the encoder will count annular between 0 to 3999.

Note: 1. Reload Deveices is required after the configuration parameters, otherwise the configuration parameters cannot take effect.

 Latch enabling Latch Enable, count reverse enabling CounterxDir _ inv, initial value setting function Set Counterx Value need to be enabled or set before starting to count enabling ENC _ Enablex.

6.4 Module configuration description

6.4.1 Application in the TwinCAT3 software environment

1、 dead work

- hardware environment
 - > Module model XB 6-P20D
 - > Power supply module, EtherCAT coupler, end cover

This description takes the XB 6-P 2000H power supply, the XB 6-EC 0002 coupler as an example

- > One computer, pre-installed with Twin CAT3 software
- > EtherCAT Special shielding cable
- > Hand wheel / encoder / orthogonal pulse transmitter, etc
- Switch power supply
- > Module installation of guide rail and guide rail fixings
- Device Profile
 Profile acquisition address:<u>https://www.solidotech.com/documents/configfile</u>

 Hardware configuration and wiring
 - Please follow the"<u>4. Installation and disassembly</u>" "<u>5. Wiring</u>"Requires the operation

2、 Preset profile

To the ESI profile (EcatTerminal-XB6_V3.17_ENUM. The xml) is placed under the TwinCAT installation directory "C: $\$ TwinCAT $\$ 3.1 $\$ Config $\$ Io $\$ EtherCAT", as shown in the figure below.

R.	>	此申脑	\$	木地磁盘(())	>	TwinCAT	>	31	>	Config	>	lo	>	EtherCAT
51		加小口四回	1	400城西(C.)	1	IWINCAT	1	5.1	1	comig	-	10	1	LUICICAI

67 ¥h	へ (約3万円100	NA 101	al-sh
	11011110121 0.33	关空 AUTE 入旧	L'ULU IND
Beckhoff EKx9xx.xml	2017/11/3 9:53	XML 文档	1,223 KB
Beckhoff EP7xxx.xml	2017/11/8 9:46	XML文档	9,290 KB
Beckhoff ATH2xxx.xml	2017/11/23 13:22	XML文档	439 KB
Beckhoff EPP3xxx.xml	2017/12/8 8:48	XML 文档	2,099 KB
Beckhoff EPP1xxx.xml	2017/12/14 11:34	XML文档	480 KB
Beckhoff EL34xx.xml	2017/12/15 15:35	XML文档	5,634 KB
Beckhoff EK13xx.xml	2017/12/19 14:30	XML文档	16 KB
Beckhoff EPP2xxx.xml	2017/12/28 12:22	XML文档	1,811 KB
Beckhoff EJ1xxx.xml	2018/1/4 10:00	XML 文档	67 KB
Beckhoff EJ3xxx.xml	2018/1/4 10:07	XML 文档	1,169 KB
Beckhoff EJ7xxx.xml	2018/1/4 10:11	XML 文档	2,339 KB
Beckhoff EJ9xxx.xml	2018/1/4 10:23	XML文档	160 KB
Beckhoff EJ6xxx.xml	2018/1/4 10:31	XML 文档	313 KB
Beckhoff EL30xx.xml	2018/1/11 13:03	XML 文档	11,508 KB
Beckhoff EL37xx.xml	2018/1/23 13:59	XML 文档	11,837 KB
Beckhoff EJ2xxx.xml	2018/1/23 14:21	XML 文档	239 KB
Beckhoff EL5xxx.xml	2018/1/23 15:11	XML文档	6,307 KB
Beckhoff EJ5xxx.xml	2018/1/23 15:12	XML文档	218 KB
Beckhoff EL2xxx.xml	2018/1/24 9:40	XML文档	2,868 KB
Beckhoff EL33xx.xml	2018/1/26 9:34	XML文档	6,727 KB
Beckhoff ELM3xxx.xml	2018/2/1 10:19	XML文档	14,238 KB
Beckhoff AX5xxx.xml	2018/2/8 16:15	XML文档	930 KB
Beckhoff EL1xxx.xml	2018/2/19 17:15	XML文档	3,387 KB
Beckhoff EL25xx.xml	2018/2/21 10:23	XML文档	6,543 KB
EcatTerminal-XB6_V3.17_ENUM.xml	2023/9/7 16:12	XML 文档	554 KB

3. Create the project

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



b. Click "New TwinCAT Project", and "Name" and "Solution name" correspond to the project name and solution name respectively, and "Location" correspond to the project path, these three can choose the default, and then click "OK", the project was created successfully, as shown in the following figure.

New TwinCAT Pro	oject	Get Starte	ed Beckhoff Ne	ews		
New Measureme	nt Project	A monotone and a second	The same of the same set of th	What's New in	TwinCAT 3	
New Project					?	×
▶ Recent	.N	ET Framework 4.5 🔹 Sc	ort by: Default	• # 1	Search Installed	٩
 Installed Templates Other Project TwinCAT Meas TwinCAT PLC TwinCAT Proje Samples Online 	Installed Installed Templates Other Project Types TwinCAT Measurement TwinCAT PLC TwinCAT Projects Samples Online		TwinCAT Projects	Type: TwinCAT TwinCAT XAE Sy Configuration	Projects stem Manager	
Name:	TwinCAT Project1					
Location: Solution name:	D:\workspace\Twin	CAT Project	-	Create directory	for solution OK Cance	4

×

4、scanner

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

Solution Explorer	•	Р ×	
○ ○ ☆ io - @ / ≠			
Search Solution Explorer (Ctrl+;)		<u>م</u>	
 Solution 'TwinCAT Project1' (1 project) TwinCAT Project1 SYSTEM MOTION PLC SAFETY C++ I/O 			
Mappings	°0 *0	Add New Item Ins Add Existing Item Shift+Alt+A Export EAP Config File	
	â	Paste Ctrl+V Paste with Links	

below.

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

1 new I/O devices found

🗇 Device 2 (EtherCAT) (以太网 (Realtek PCIe GbE Family Controller))	ОК
	Cancel
	Select All
	Unselect All

c. Popup Scan for boxes, click select Yes; popup Activate Free Run, click select Yes, as shown in the figure below.



d. After scanning the device, the left navigation can see B ox1 (XB 6-EC0002) and M odule1 (XB 6-P20D), can see the TwinCAT in "Online" at "OP" state, can observe the slave device RUN light is always on, as shown in the figure below.

Solution Explorer 👻 🖣 🗙	TwinCAT Project	172 🕫 🗙		
0 0 🙆 10 - 🗊 🕨 🗕	General Ether	CAT Process Data Slots	Startup CoE - Online Or	nline
Search Solution Explorer (Ctrl+;) Solution 'TwinCAT Project172' (1 project) Subscription 'TwinCAT Project172 Subscription 'TwinCAT Project172 Subscription 'TwinCAT Project172 Subscription 'TwinCAT Project172 Subscription 'TwinCAT Project172' Subscription 'TwinCAT Proj	State Machi Init Pre-Op Op	ne Bootstrap Safe-Op Clear Error	Current State: Requested State:	OP OP
 Wo Wo Wo Device 3 (EtherCAT) Image Image-Info ◊ SyncUnits □ Inputs ○ Outputs 	DLL Status Port A: Port B: Port C: Port D:	Carrier / Open No Carrier / Closed No Carrier / Closed No Carrier / Closed		
 infoldata JD Box 1 (X86-EC0002) inputs Outputs Module 1 (X86-P20D) inputs ENC Control 	File Access of Downloa	over EtherCAT		

5. Validate basic functions

a. Click the left navigation tree "Box 1-> Startup-> New" to enter the configuration parameter editing page, as shown in the figure

Solution Explorer		TwinCAT Proj	ect172	+ ×								
00 <u>6</u> 0- <u>6</u> 4 <u>-</u>		General Et	herCAT	Process	Data Slots	Startup	CoE - O	nline Online				
Search Solution Explorer (Ctrl+;)	ρ-					2		Edit CANope	n Startup Entry			
Solution TwinCAT Project172'(1) Solution TwinCAT Project172 Solution TwinCAT Project172 Solution MOTION PLC SAFETY SAFETY C++ Z0 VO	oroject)	Trans C <ps></ps>	Proto CoE	Index 0xF030.	Data 01 00 0D	62 00 00	Comm downle	Transition □I→P ☑P→S □S→0 Data (hexbin): Validate Mask	□S→P □0→S	Index (hex): Sub-Index (dec) Validate	0 0 Complete Access	OK Cancel Hex Edit
 Devices Device 3 (EtherCAT) 								Comment:				Edit Entry
Image-Info								Index	Name	Flags	Value	
Display Syncolines								8000.01	Encoder1 Resolution	RW	0×0000 (0)	
Outputs								8000:02	Encoder2 Resolution	RW	0×0000 (0)	
🕨 🔚 InfoData								8000:03	Encoder1 Filter	RW	0x0007 (7)	
A /D Box 1 (XB6-EC0002								8000.04	Encoder2 Filter	RW	0x0007 (7)	
Inputs								8000.05	Encoderi Count Multiple	es RW	0x0004(4)	
Outputs								8000.08	Encoder2 Count Multiple	ES PAV	0x0004 (4)	
🖌 🔵 Module 1 (XB6-	P20D)							8000.08	Encoder2 Count Range	BW	0x0000 (0)	
Inputs								8000.09	Encoder1 Latch Signal	RW	0x0000 (0)	
ENC Control								8000	Encoder2 Latch Signal	RW	0×0000 (0)	
b WcState								+ F030.0	Configured Module Ider	nt List RW		
b InfoData												
2 Mannings												
W.		Movel	Jp	Move Do	nwn							

In the Edit CANopen Startup Entry popup, click "+" ahead of Index 2000:0 to expand the b. configuration parameters menu, and you can see 10 configuration parameters. Click any parameter to make relevant configuration, as shown in the figure below.

Transition □I→P ☑P→S □S→0	Inde □S→P Sub □O→S □\	x (hex): -Index (dec): /alidate	0 0 Complete Access	OK Cancel
)ata (hexbin):				Hex Edit
'alidate Mask Comment				Edit Entry
Index	Name	Flags	Value	
= 8000:0	ENC Configruation	RW	>11 <	
8000:01	Encoder1 Resolution	RW	0x0000(0) ①公辨家功能起罢0	~65535
8000:02	Encoder2 Resolution	RW	0x0000 (0)	
	Example of Eilan	DW	0×0007 (7)	
8000:03	Encoderi Filler	HAA	() ① 市油会物配罢	
8000:03 8000:04	Encoder2 Filter	RW	0x0007(7) ②滤波参数配置	
8000:03 8000:04 8000:05	Encoder2 Filter Encoder1 Count Multiples	RW	0x0007(7) ②滤波参数配置 0x0004(4) ②计数/A·家配置	
8000:03 8000:04 8000:05 8000:06	Encoder1 Filter Encoder2 Filter Encoder1 Count Multiples Encoder2 Count Multiples	RW RW RW	0x0007 (7) ②滤波参数配置 0x0004 (4) 0x0004 (4) ③计数倍率配置	
	Encoder? Filter Encoder? Filter Encoder? Count Multiples Encoder? Count Multiples Encoder? Count Range	RW RW RW RW	0x0007(7) ②滤波参数配置 0x0004(4) ③计数倍率配置 0x0004(4) ④计数方式配置	
8000:03 8000:04 8000:05 8000:06 8000:07 8000:08	Encoder! Filter Encoder! Count Multiples Encoder! Count Multiples Encoder! Count Range Encoder? Count Range	RW RW RW RW RW	0x0007 (7) ②滤波参数配置 0x0007 (7) ③滤波参数配置 0x0004 (4) ④计数倍率配置 0x00004 (4) ④计数方式配置	
	Encoder/ Filter Encoder2 Filter Encoder1 Count Multiples Encoder2 Count Multiples Encoder1 Count Range Encoder2 Count Range Encoder1 Latch Signal	RW RW RW RW RW RW		
	Encoder? Filter Encoder? Filter Encoder? Count Multiples Encoder? Count Range Encoder? Count Range Encoder? Latch Signal Encoder? Latch Signal	RW RW RW RW RW RW RW	Looor (7) ②滤波参数配置 Looor (7) ③滤波参数配置 Looor (4) ③计数倍率配置 Looor (6) ④计数方式配置 Looor (6) ⑤锁存通道配置	

The left navigation tree "Module-> Inputs" displays the upstream data of the encoder input c. module, used to monitor the status of the encoder, as shown in the following figure.



Þ and Mappings d. The left navigation tree "Module-> ENC Control" displays the descending data of the encoder input module, used to view the output status of the encoder, as shown in the figure below.

解决方案资源管理器 ▼ 4 ×	TwinCAT Project1 ↔ ×							
000 10-20 1-	Name	Online	Туре	Size	>Address	In/Out	User ID	Linked to
(明亮的)为于实际历历(Challer)	Latch0_Enable	0	BIT	0.1	41.0	Output	0	
技影胜决/J柔页/原昌珪裔(Ctil+,) ₽・	Latch1_Enable	0	BIT	0.1	41.1	Output	0	
解决方案"TwinCAT Project1"(1 个项目)	Z Phase0_Enable	0	BIT	0.1	41.2	Output	0	
TwinCAT Project1	Z Phase1_Enable	0	BIT	0.1	41.3	Output	0	
SYSTEM	Compare0_Enable	0	BIT	0.1	41.4	Output	0	
MOTION III DUG	Compare1_Enable	0	BIT	0.1	41.5	Output	0	
	Counter0Dir_Inv	0	BIT	0.1	41.6	Output	0	
SAFEIT	Counter1Dir_Inv	0	BIT	0.1	41.7	Output	0	
	ENC_Enable0	0	BIT	0.1	42.0	Output	0	
A Services	ENC_Enable1	0	BIT	0.1	42.1	Output	0	
 Device 2 (EtherCAT) 	POWER LOSS HOLDO ENABLE	0	BIT	0.1	42.2	Output	0	
👯 Image	POWER LOSS HOLD1 ENABLE	0	BIT	0.1	42.3	Output	0	
👯 Image-Info	CLEAR VALUE0	0	BIT	0.1	42.4	Output	0	
SyncUnits	CLEAR VALUE1	0	BIT	0.1	42.5	Output	0	
Inputs	Set Counter0 Value	0	UDINT	4.0	43.0	Output	0	
Outputs	Set Counter1 Value	0	UDINT	4.0	47.0	Output	0	
InfoData	▶ DO	0x0 (0)	BITARR16	2.0	51.0	Output	0	
 Box 1 (XB6-EC0002) 								
Inputs								
P Uutputs								
Module I (XB6-P20D)								
P = inputs								
WcState								
InfoData								
at Mappings								

6.4.2 Application in the TIA Portal V14 software environment

1、dead work

- hardware environment
 - > Module model XB 6-P20D
 - > Power supply module, PROFINET coupler, end cover

This description takes the XB 6-P 2000H power supply, the XB 6-PN 0002 coupler as an example

- > One computer, pre-installed with TIA Portal V14 software
- > **PROFINET Special shielding cable**
- > Hand wheel / encoder / orthogonal pulse generator, etc
- > One for Siemens PLC
- > Switch power supply
- > Module installation of guide rail and guide rail fixings
- Device Profile

Profile acquisition address:https://www.solidotech.com/documents/configfile

• Hardware configuration and wiring Please follow the"<u>4. Installation and disassembly</u>" "<u>5. Wiring</u>"Requires the operation

2、 new construction

a. Open the TIA Portal V14 software, and click Create a New Project.

	Create new project	
en existing project	Project name:	X86-P20D [C:Users129719]Documents
ate new project	Version:	V17
grate project	Author: Comment:	29719
se project		
21		Cr
Icome Tour		
at steps		

- Project name: custom, can default.
- Path: The Project maintains the path, but to keep the default.
- Version: Keep the default.
- Author: Keep the default.
- Note: Custom, not available.

3、 Add a PLC controller

a. Click on the Configuration Devices.



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



4. Scan the connection device

a. Click the left navigation tree Online Access-> Update accessible devices, as shown in the figure

below.

▼ 🔄 XB6-P20D	
💣 Add new device	
Devices & networks	
PLC_1 [CPU 1214C DC/DC/DC]	
Ungrouped devices	
🕨 🚟 Security settings	
Cross-device functions	
🕨 🙀 Common data	
Documentation settings	
Languages & resources	
Version control interface	
Online access	
🍟 Display/hide interfaces	
 Realtek PCIe GbE Family Controller 	×
Dpdate accessible devices	
Pisplay more information	
Intel(R) Wi-Fi 6 AX201 160MHz	
PC internal [Local]	
USB [S7USB]	
 TeleService [Automatic protocol detectio. 	
Card Reader/USB memory	

b. After the update, display the connected slave equipment, as shown in the figure below.



The IP address of the computer must be in the same segment as the PLC. If it is not in the same segment, repeat the above steps after modifying the IP address of the computer.

5. Add a GSD configuration file

- a. In the menu bar, select Options-> Manage Common Site Description File (GSDML) (D).
- b. Click the Source Path to select the file.
- c. Check whether the status of the GSD file to add is Not installed, and click the Install button is not installed. If installed, click Cancel to skip the installation step.

Installed GSDs	GSDs in the project				
Source path: D:\					
Content of import	ed path				
File		Version	Language	Status	
GSDML-V2.3-Sdot	-XB6-PN0002_v3.1.19-20230	V2.3	English	Already installed	
<					>
			Delete	Install	ancel

6. Add from station device

- a. Double-click the navigation bar "Devices and Networks" on the left.
- b. Click the "Hardware Directory" vertical row button on the right, and the directory display is shown in the figure below.



c. Select "Other Field Equipment-> PROFINET IO-> I / O-> Sdot-> X-Bus-> XB 6-PN0002".

- ett Edit View (nsert Online Options Dools Window Help 💁 🔓 Saveproject 🚔 🕺 🤹 🖓 💺 🖓 🖢 🗰 🎇 🕼 🔛 🔛 🔛 🖉 Goonline 🖉 Gooffine 🏭 🔝 🐺 🖉 🗶 👘 Totally Integrated Auto PORTAL 16 XB6-P20D > Devices & networks _ # =× Devices 🛃 Topology view 🛃 Network view 🛐 Devi • Network 💌 🔐 Relations 👑 👯 📲 🔛 🛄 🍳 ± X86+200
 X86+200
 X86+200
 Vices & networks
 Devices & networks
 Vices & ✓ Catalog Search init init Profile: <All> Filter Profile: Julia V

 Filter Profile: Julia V

 Grows & starters

 Grows & Starter Filter PLC_1 CPU 1214C PNIO XB6-PN0002 DP-NORM k BAYMRS
 BAYMRS
 BAYMRS
 DISTRICT PN Gateway
 DISTRICT PN Gateway
 SK-PN X-BU 2 SIEMENS
 SOLIDOT Sei
- d. Drag or double-click XB 6-PN0002 to Network View, as shown below.

e. Click Unassigned (blue font) on the slave device and select PLC_1.PROFINET Interface _1, as shown in the figure below.



f. After the connection is completed, as shown in the figure below.

P20D > Devices & net	tworks			_ 7
	2	Topology view	h Network view	Device vie
etwork Connections	HMI connection	Relations	2 3 1 1	🔍 ± 🖂
		₽ IO syst	tem: PLC_1.PROFINET	IO-System (100)
_1 11214C	PNIO XB6-PN0002 PLC_1 C_1.PROFINETIO-System	DP-NORM		E

g. Click the device name and rename the device, as shown below.



 h. Click Device View to enter the device overview of the coupler. In the right Module directory, add I / O modules according to the actual topology (the order must be consistent with the actual topology, otherwise the communication is unsuccessful), as shown in the following figure.

Y Module	Rack	Slot I addre	ss Q address	Туре		✓ Catalog	
▼ PNIO1	0	0		XB6-PN0002	^	<search></search>	inil in
PN-IO	0	0 X1		PNIO		Filter Profile:	
XB6-P20D_1	0	1 6887	6475	XB6-P20D		Head module	
	0	2					
	0	3				Analog Input	
	0	4			-	Analog Output	
	0	5			_	Digital I/O	
	0	6				Digital Input	
	0	7				Digital Output	
	0	8				Function I/O	
	0	9				XB6-C01SP	
	0	10				XB6-P20A	
	0	11				XB6-P20D	
	0	12				XB6-P20DS	
	0	13				XB6-PC80B	
	0	14				Pulse I/O	
	0	15				🕨 🧊 Relay Output	
	0	10					
	0	10					
	0	10					
	0	20					
	0	21					
	0	22					
	0	23					
	U	23					

7. Assign the device name

a. Switch to Network View, right-click the cable for the PLC and PNIO 1, and select Assign Device

Name.	IO system: PLC_1.PROFINET IO-System	100) ^
PLC_1 CPU 1214C	PNIO1 XB6-PN0002 PLC_1	
1 	PLC_1.PROFINET IO-Syste	- 11
	X Cut Ctrl+X	
	Ctrl+C	
	Paste Ctrl+V	
	X Delete Del	
	Rename F2	-
	Assign to new DP master / IO controller	*
	Compile	
	Download to device	
	ø Go online Ctrl+K €	_
	💕 Go offline Ctrl+M	
	😡 Online & diagnostics Ctrl+D	_
	Assign device name	_
	Assign PROFIsafe address	
	Receive alarms	
	Update and display forced operands	
	Show catalonCtrl+Shift+C	

b. The Assign PROFINET Device Name, window appears, as shown in the figure below.

Device type: X86-PN0002 Online access Type of the PG/PC interface: PNIE Device filter Only show devices of the same type Only show devices with bad parameter settings Only show devices of the same type		_	PROFINET device	name:	pnio1		•
Online access Type of the PG/IPC interface: PEVICE Tilter PG/IPC interface: Pevice filter Image: Physical States and System Image: Province States and States an	4	<u> </u>	Devie	ce type:	XB6-PN0002		
Type of the PGIPC interface: PRIPC interface: PCIPC interface: Period filter Image: Point of the PGIPC interface: <			Online access				
PGIPC interface: Device filter Only show devices of the same type Only show devices with bad parameter settings IP address MAC address Device PROFINET device name Status IP address MAC address Device PROFINET device name Status IP address MAC address Device PROFINET device name Status IP address MAC address Device PROFINET device name Status IP address Mac address Device IP address IP address </td <td></td> <td></td> <td>Type of the PG/PC in</td> <td>terface:</td> <td>PN/IE</td> <td></td> <td>-</td>			Type of the PG/PC in	terface:	PN/IE		-
Device filter Image: Device filter <t< th=""><th></th><th></th><th>PG/PC in</th><th>terface:</th><th>Realtek PCIe GbE Fami</th><th>ly Controller</th><th>- 💎 🖸</th></t<>			PG/PC in	terface:	Realtek PCIe GbE Fami	ly Controller	- 💎 🖸
Only show devices of the same type Only show devices with bad parameter settings Only show devices without names Accessible devices in the network: Paddress MAC address Device PROFINET device name Status Flash LED Im Update list Assign name	لي ا		Device filter				
Only show devices with bad parameter settings Only show devices without names Accessible devices in the network: Paddress Device PROFINET device name Status Fish LED International Internatione International Internatione International Internatione Internatio	۳ <u>۱</u>		🛃 Only show d	levices of	the same type		
Only show devices without names Accessible devices in the network: P address MAC address Device PROFINET device name Status Fish LED Update list Assign name			Only show d	levices wi	th bad parameter settings		
Accessible devices in the network: IP address MAC address Device PROFINET device name Status Flash LED LUpdate list Assign name			Only show d	levices wi	thout names		
Accessible devices in the network:					and at normalized		
IP address MAC address Device PROFINET device name Status Flash LED IUpdate list Assign name		Accessible	devices in the network:				
Flash LED		IP address	MAC address	Device	PROFINET device name	Status	
Flash LED		-					
Flish LED Flish LED Update list Assign name		_					
Flash LED							
Vpdate list Assign name	Flash LEI						
Update list Assign name		4					
Operation Transformation						Indate list	Assion name
							- Addigit Hume
	Online status	information:					
Online status information:	U Search	completed. 0 of 0 device	es were found.				
Online status information: Search completed. 0 of 0 devices were found.							
Online status information: Search completed. 0 of 0 devices were found.	1			101			D
Online status information: Search completed. 0 of 0 devices were found.	-						

See if the MAC address on the coupler screen is the same as the MAC address for the assigned device name.

- PROFINET Device Name: Name set in Assign slave Station IP Address and Device Name.
- Type of PG / PC interface: PN / IE.
- PG / PC interface: the actual used network adapter.
- c. Select From Station Device, click Update List, and click Assign Name. Check whether the status of the accessible nodes in the network is OK, as shown in the figure below.

4									
-	the second se		PROFINET devic	te name:	pnio1				
			Dev	vice type:	XB6-PN0002				
			Online access						
			Type of the PG/PC i	interface:	PN/IE			-	
			PG/PC i	interface:	Realtek PCIe	GbE Family C	ontroller	•	
			Device filter						
			Only show	devices of	the same type				
				devices wi	th bad paramete	er settings			
			Ophyshow	devices wi	thout names				
			_ Only show	devices wi	inoutnames				
		Accessible dev	ices in the network:						
		IP address	MAC address	Device	PROFINET dev	ice name	Status		
		192.168.0.2	00-A0-45-02-0E-7C	PNIO	pnio1	Sector 1	OK		
Γ									
🗌 Fli	ash LED								
						Und	the line	Assistant	
						Upda	atellist	Assign nan	ne

d. Click on Close.

8. Download the configuration structure

- a. In the Network View, select the PLC.
- b. Click the PLC. button in the menu bar to download the current configuration to the
- c. In the pop-up "Extended Download to Device" interface, the configuration is shown in the figure

PLC_1 CPU 1214C DCID 1 X1 PN/IE 192.168.0.1 PN/IE_1 Type of the PG/PC interface: PN/IE PI/IE P PG/PC interface: Realtek PCIe GbE Family Controller P Connection to interface/submet: PN/IE_1 P Select target device: Show all compatible devices Target device Device Device type Interface type Address Flash LED Image: Commention in the provide status information: P Status		Device	Device type	Slot	Interface type	Address	Subnet
Type of the PG/PC interface: PN/IE • PG/PC interface: PR/IE • PG/PC interface: PR/IE_1 • Connection to interface/subnet: PN/IE_1 • Ist gateway: • • Select target device: Show all compatible devices • Device Device type Interface type Address Target device Flash LED Flash LED • • • • Device Device type Interface type • • • Place Device type • • • • • Place Device type Interface type •		PLC_1	CPU 1214C DC/D	214C DC/D 1 X1 PN/IE 192.168.0.1		PN/IE_1	
PG/PC interface: PG/PC			Type of the PG/PC inte	rface:	PN/IF		
Connection to interface/subnet: PN/IE_1 Connection to interface/subnet: PN/IE_1 Select target device: Show all compatible devices Device Device Device type Interface type Address Target devi Flash LED Duine status information: Display only error messages			PG/PC inte	rface:	Realtek PCIe (bE Family Controlle	er 💌
Ist gateway: Ist gateway: Select target device: Show all compatible devices Device Device type Interface type Plash LED Interface type Access address			Connection to interface/su	bnet:	PN/IE 1	controlle	
Select target device: Show all compatible devices Device Device type Interface type Address Target devi PNIE Access address – Flash LED			1st nat	eway.			
Flash LED Start		Device	Device type	Interf	ace type Ad	dress	Target devi
Flash LED		Device	Device type	Interf	ace type Ad	dress	Target devi
		Device 	Device type —	Interf PN/IE	ace type Ad	dress cess address	Target devi —
Flash LED Start Online status information: Display only error messages		Device 	Device type 	Interf PN/IE	ace type Ad	dress cess address	Target devi —
	na	Device 	Device type	Interf PN/IE	ace type Ad	dress cess address	Target devi
Online status information:	Flash LED		Device type	Interf PN/IE	ace type Ad	dress cess address	Target devi
	Flash LED	Device	Device type	Interf PN/IE	ace type Ad	dress cess address	Target devi
	Flash LED	Device	Device type	Interf PN/IE	ace type Ad	dress cess address	Target devi <u>Start</u> or messages
	Flash LED	n:	Device type	Interf PN/IE	ace type Ad	dress cess address	Target devi Start

- Extended download to device Configured access nodes of "PLC_1" Device Device type Slot Interface type Address Subnet PLC_1 CPU 1214C DC/D... 1 X1 PN/IE 192.168.0.1 PN/IE_1 • • • <u>•</u> Type of the PG/PC interface: PN/IE PG/PC interface : Realtek PCIe GbE Family Controller • • Connection to interface/subnet: PN/IE_1 Select target device: Show all compatible devices • Interface type Device type Address Target device Device 192.168.0.1 PLC_1 CPU 1214C DC/D... PN/IE PLC_1 PN/IE Access address Flash LED Start search Online status information: Display only error messages Connection established to the device with address 192.168.0.1. ^ Scan completed. 1 compatible devices of 3 accessible devices found. = Scan and information retrieval completed. Retrieving device information. Load Cancel below.
- d. Click the Start Search " button, as shown in the figure

- e. Click on Download.
- f. Select, Continue without synchronization, as shown in the figure

1	Software synchronization	Status	Action	
	'Program blocks'			
	Main [OB1]	0	Manual synchronization required	
Ā	✓ 'PLC tags'			
	Tags	0	Manual synchronization required	
<			11	

g. Select the Stop it All option.



- h. Click on the Mount.
- i. Click on Finish.
- j. Repower the device.

9、 communication junction

a. Click 🌆 the button, then click the Go Online button, as shown in the figure below.

	🔳 ┥ XB6-I	20D > Devices &			
					Topology view A Network vie
		twork LI Connectio	IMI connection	🔄 🗄 Relations 😥 🚜 1	
	1000				IO system: PLC_1.PROFIN
/ice			DNUC		
etworks	CPL CPL	12140	XB6-PN0002		
1214C DC/DC/DC]			PLC 1	DI-NORM	
onfiguration			rec_r		
diagnostics					
blocks			PLC 1. PROFINET IO-Syst		
ogy objects			1		
source files					
types					
nd force tables					
ackups					
communication					
roxy data					
info					
n text lists					
odules					
ed I/O					
devices					
tings					
e functions					
ta					
tion settings					
& resources					
trol interface					
B memory					
	<				> 100%

10. Check the equipment indicator lamp

XB 6-P2000H: The P lamp is always on in green.

- XB 6-PN0002: P light is always green, L light is always on, B light is not on, R light is always on.
- I / O module: P is always on and R is always on.

11, parameter setting

- a. Open the Device View.
- b. Select the XB 6-P20D module and click "Module Parameters" as shown in the following figure. The parameters can be configured according to the actual use needs. After the configuration is completed, the program can be downloaded again to the PLC. The PLC and the module need to be powered on again.

 General Catalog information 	Module parameters		
Inputs Module parameters	XB6-P20D Parameter		
I/O addresses	Encoder1_Resolution: Encoder2_Resolution: Encoder1_Filter: Encoder2_Filter: Encoder1_Count_Multiples: Encoder2_Count_Multiples: Encoder1_Count_Range: Encoder2_Count_Range: Encoder1_Latch_Signal: Encoder2_Latch_Signal:	0 7 7 4 0 0 0 0 0 0 0 0	

12. I/O test and verify

a. Expand the item navigation on the left and select the Monitoring and Force Table, as shown in the

figure below.

Devices	
	🔲 🔿
▼ T X86-P20D	
Add new device	
Devices & networks	
PLC_1 [CPU 1214C DC/DC/DC]	V 🔵
Device configuration	
😡 Online & diagnostics	
Program blocks	•
Technology objects	
External source files	
PLC tags	•
PLC data types	
 Watch and force tables 	
Add new watch table	
Force table	
Online backups	
Traces	
OPC UA communication	
Device proxy data	
Program info	
PLC alarm text lists	
Local modules	
Distributed I/O	
La Ungrouped devices	
Security settings	
Cross-device functions	
Common data	
Documentation settings	
Languages & resources	
Version control interface	
Online access	

b. Double-click "Add a new monitoring table", and the system adds a new monitoring table, as

shown in the following figure.

	ш 4	XB6-1	200 + PLC_1	[CPU 1214C DODG	DCJ • Watch and	force tables 🕨	Vatch table_1			_ = = ×
Devices										
111	🔤 🔿	22	12 10 10	9, 9, 2 00 00						
		i	Name	Address	Display format	Monitor value	Modify value	9	Comment	Tag c
▼ 🔄 XB6-P20D	V 🔍 🔨	1		Add new>						
Add new device										
devices & networks										
PLC_1 [CPU 1214C DC/DC/DC]	2									
Device configuration										
Online & diagnostics										
Program blocks	•									
Technology objects										
External source files	=									
PLC tags	•									
PLC data types										
 Watch and force tables 										
Add new watch table										
Force table										
Watch table_1										
🕨 🙀 Online backups										
🕨 📴 Traces										
OPC UA communication										
Device proxy data										
Program info										
PLC alarm text lists										
Local modules	M									
Distributed I/O	Z									
Ungrouped devices										
Security settings										
Cross-device functions										
Common data										
Documentation settings										
Languages & resources										
Version control interface										N 1

c.

Click the button.

d. Open the Device View and view the channel Q address (the channel address of the output signal) or I address (the input channel address of module XB 6-P 20DS) in the device Overview.
 For example, the "Q address" of the XB 6-P20D module is 64 to 75, and the "I address" is 68 to 87, as shown in the figure below.

Device overview							
Module	 Rack	Slot	I address	Q address	Туре	Article num	
V PNIO	0	0			XB6-PN0002	1234567	^
PN-IO	0	0 X1			PNIO		
XB6-P20D_1	0	1	6887	6475	XB6-P20D		

- e. In the monitoring table address cell, enter " QB 64.... QB 75 "," I B68I B 87 ", press" Enter key ", the system display is shown in the figure below.
- f. Enter IB + I Address in the address bar to monitor the input module.

i	地址	显示格式	监视值	修改值	9	注释 注释
	%QB64	Hex	16#00	16#00		Latch0_Enable&Latch1_Enable&Z Phase0_Enable&Z Phase1_Enable&Compare0_Enable&Compare1_Enable&Counter1Dir_Inv
	%QB65	Hex	16#00	16#00		ENC_Enable0&ENC_Enable1&POWER_LOSS_HOLD0_ENABLE&POWER_LOSS_HOLD1_ENABLE&CLEAR_VALUE0&CLEAR_VALUE1
	%QB66	Hex	16#00	16#00		Set Counter0 Value4
	%QB67	Hex	16#00	16#00		Set Counter0 Value3
	%QB68	Hex	16#00	16#00		Set Counter0 Value2
	%QB69	Hex	16#00	16#00		Set Counter0 Value1
	%QB70	Hex	16#00	16#00		Set Counter1 Value4
	%QB71	Hex	16#00	16#00		Set Counter1 Value3
	%QB72	Hex	16#00	16#00		Set Counter1 Value2
	%Q873	Hex	16#00	16#00		Set Counter1 Value1
	%QB74	Hex	16#00	16#00		
	%Q875	Hex	16#00	16#00		DO
	%IB68	Hex	16#00	16#00		Latch0 Valid& Latch1 Valid&SetCounter0_Finished&SetCounter1_Finished&Compare0_valid&Compare1_valid&CounterDir0&CounterDir0
	%IB69	Hex	16#00	16#00		MutipleO error&Mutiple1 error&FrequencyO error&Frequency1 error
	%IB70	Hex	16#00	16#00		Encoder0 Counter Value4
	%IB71	Hex	16#00	16#00		Encoder0 Counter Value3
	%IB72	Hex	16#00	16#00		Encoder0 Counter Value2
	%IB73	Hex	16#00	16#00		Encoder0 Counter Value 1
	%IB74	Hex	16#00	16#00		Encoder1 Counter Value4
	%IB75	Hex	16#00	16#00		Encoder1 Counter Value3
	%IB76	Hex	16#00	16#00		Encoder1 Counter Value2
	%IB77	Hex	16#00	16#00		Encoder1 Counter Value1
	%IB78	Hex	16#00	16#00		Encoder0 Latch Value4
	%1879	Hex	16#00	16#00		Encoder0 Latch Value3
	%IB80	Hex	16#00	16#00		Encoder0 Latch Value2
	%IB81	Hex	16#00	16#00		Encoder0 Latch Value1
	%IB82	Hex	16#00	16#00		Encoder1 Latch Value4
	%IB83	Hex	16#00	16#00		Encoder1 Latch Value3
	%1884	Hex	16#00	16#00		Encoder1 Latch Value2
	%IB85	Hex	16#00	16#00		Encoder1 Latch Value1
	%IB86	Hex	16#00	16#00		
	%IB87	Hex	16#00	16#00		DI

g. Enter the value in the Modify Value cell, and click Write to view the channel light.²⁴

6.4.3 Application in the CODES YS V3.5 software environment

1、dead work

- hardware environment
 - > Module model XB6-P20D
 - Power supply module, EtherNet / IP coupler, end cover
 This description takes the XB 6-P2000H power supply, the XB 6-EI 0002 coupler as an example
 - > One computer, pre-installed with CODESYS V3.5 software
 - > EtherNet / IP special shielded cable
 - > Hand wheel / encoder / orthogonal pulse generator, etc
 - Switch power supply
 - > Module installation of guide rail and guide rail fixings
 - > Device Profile
 - Profile acquisition address:https://www.solidotech.com/documents/configfile
- Hardware configuration and wiring Please follow the"<u>4. Installation and disassembly</u>" "<u>5. Wiring</u>"Requires the operation

2. Create the project

- a. Open the CODESYS software and select Tools-> Device Repository.
- b. Display the device storage window, click Install, and select the relevant EDS file for installation. Successful installation shows that the device "xxxx" has been installed to the device repository, as shown in the figure below.

s • 4 X	Start P	Page X Repository X
	Location	System Repository v Edit Locations (C:\ProgramData\CODESYS\Devices)
	Installed d	device descriptions
	<	Vendor 35 - Smart Software Solutions GmbH Generic EtherNet/IP device 35 - Smart Software Solutions GmbH Generic EtherNet/IP device 35 - Smart Software Solutions GmbH Maning Soldot Electric Technology Co > D: W86_E10002_V1.15T.EDS Previce "x86-E10002" installed to device repository.
		Details

3. Create the project

a. Click File, select New Project, enter the project name, and click OK, as shown in the figure below.



4. Add the Ethernet

- a. Start the PLC using the term 'CODESYS Control Win V3-x64 SysTray'.
- b. Double-click Device (CODESYS Control Win V3 X 64) in the left navigation tree, and click Scan Network.
- c. Select device, scan network, network is active, as shown in the figure below.

	The second se	
cations		
up and Restore	· · · · · · · · · · · · · · · · · · ·	1
		•
	Gateway	[0000_B164] (active)
ettings	IP-Address:	Device Name: PC-202307051559
hell	Port	Device Address:
Groups	1217	0000.B16A
hts		0000 0004
ights		Target Type: 4096
ts		Target Vendor: 3S - Smart Software Solutions GmbH
ployment		Target Version: 3.5.15.10
nation		

- d. Select Device (CODESYS Control Win V3 X 64) in the left navigation tree, and right click select Add Device.
- e. Select the "E thernet IP-> Ethernet Adapter-> E thernet", as shown in the figure below.

→ 井 ×	Add Device ×	
	Name Ethernet	
(CODESYS Control Win V3 x64)	Alice	
Logic	Action	
	Abbeing gewice O Tiper, gewice O Find gewice O Obgage gewice	
	String for a fulltext search Vendor <all vendors=""></all>	
Task Configuration	Name Vendor Version Description	•
MainTask (IEC-Tasks)	B- M Fieldhurser	
DIC PRG	B-CAN CANbus	[0000.B16A] (active)
	B TherCAT	Device Name:
	Ethernet Adapter	PC-202307051559
	EtherNet/IP	Device Address:
	🖻 🚟 Ethernet Adapter	0000.B16A
	Ethernet 3S - Smart Software Solutions GmbH 3.5.15.0 Ethernet Link.	Target ID:
	🖲 👄 EtherNet/IP Scanner	0000 0004
	🕮 – 🚰 Home&Building Automation	Target Type:
	< >	
	Group by category Display all versions (for experts only) Display outdated versions	Target Vendor: 3S - Smart Software Solutions GmbH
	Mame: Ethernet	Target Version:
	Vendor: 35 - Smart Software Solutions GmbH	5.5.15.10
	Categories: Ethernet Adapter, Ethernet Adapter, Ethernet Adapter,	
	Version: 3.5.15.0	
	Order Number: -	
	Description: Ethernet Link.	
	Append selected device as last child of	
	Device	
	(You can select another target node in the navigator while this window is open.)	
DUs		
'otal 0 error(s), 0 warning(s), 0 messa	Add Device Close	
L		Last build: 🔕 0 🕐 0 Precompile

- f. Right-click the Ether net (Ether net) in the left navigation tree, and select Add Devices.
- g. Select the Ether net IP-> E thernet IP Scanner-> Ether net / IP S canner, and click Add Device, as shown in the figure below.

Project tree	🛛 🖣 🛛 🗶 🕹	20D → PLC_1 [CPU 1214	4C DC/DC/DC]					_ @ = ×
Devices				🛃 To	pology view	/ B Net	work view	Device view
TH III	* th 1	Device overvie	w					
 X86-P20D Add new device Devices & networks 	- <u>7</u>	Module	os Compilo	Slot I address	s Q addres Properties	s Type	A Diagnostic	Article no.
[I] PLC_1 [CPU 1214C DC/DC/DC] [I] Ungrouped devices Security settings	3 <u>1</u>	Show all messages						
Cross-device functions Common data Documentation settings Conset anguages & resources	1 Me	essage Project XB6-P20D created. Scanning for devices on int Scanning for devices comp	erface Realtek PCIe Gl leted for interface Rea	bE Family Controller w altek PCIe GbE Family	as started. Controller. Fou	ind 2 device(s) on the network.	Go to ?
Version control interface Gnline access Display/hide interfaces								
Realtek PCIe GbE Family Controller B? Update accessible devices	100							
 plc_1 [192.168.0.1] pnio [192.168.0.2] lotel(P) W-Ei 6 AX201 160MHz 	100							
Cinternal [Local] Cinternal [Local] Cinternal [Local]								
TeleService [Automatic protocol detection] Gard Reader/USB memory	o. 🕅							

5. Configure "Ethernet IP"

- a. Double-click the left navigation tree, Ether net (Ether net), to open the Configuration window.
- b. On the Universal tab, click the right side of the Interface, select the network adapter, and finally click OK, as shown in the image below.

st_P20D	General			
POL Logic Application Dubrary Manager Dr. 2 PAG (PRG) With the control of t	Log Status Ethernet Device I/O Mapping	Interface IP address Subnet mask Default gateway Adjust operating s	192 . 168 . 0 . 1 255 . 255 . 255 . 0 0 . 0 . 0 . 0 ystem settings	
S ENIPAdapterIOTask (IEC-Tasks) DeterNet_IP_Adapter.IOCycle S ENIPAdapterServiceTask (IEC-Tasks)	Et Network Adapters			×
EtherNet_IP_Adapter.ServiceCycle	Name Description		IP address	^
MainTask (IEC-Tasks) DEC PRG	以太网 Realtek PCIe	GbE Family Controller	192, 168, 0, 33	
Ethernet (Ethernet)	WLAN Intel(R) Wi-F	i 6 AX201 160MHz	192. 168. 20. 106	
EtherNet_IP_Scanner (EtherNet/IP Scanner)	本地连接* 9 Microsoft Wi-	Fi Direct Virtual Ada	apter 0.0.0.0	
	本地主教。10 Microsoft Wi- IF address Subnet mask Default gateway MAC address OO:25:45	Fi Direct Virtual Add 8. 0 .33 35. 255. 0 .0 .0 .0 .0 :C7:A3:CB	apter #2 0.0.0.0	OK Cancel

6. Add equipment

- a. Sick the Login device.
- b. Right-click Ethe r N et _IP_S canner (Ethe r N et / IP S canner) in the left navigation tree, and select Scan Device.
- c. When the scan is complete, select XB 6 _ E I 0002 and click Copy to Project, as shown in the figure below.

Ethernet (Ethernet)	Scan Devices				
EtherNet_IP_Scanner (EtherNet/IP Scanner	Scanned Devices				
	Device name	Device type	IP Address	Serial Number	
	- XB6_EI0002	XB6-EI0002(Major Revision=16#1, Minor Revision = 16#1)	192.168.0.11	3 (16#3)	
				- snow airre	rences to
				- project	

7. Parameter settings and I / O module addition

The parameter setting function is used to configure configuration uplink data, downlink data, digital quantity emptying holding, input filtering, analog range, configuration configuration, etc.

a. Double-click the device to open the Device Configuration window and switch to the Connect page, as shown in the figure below.

- 7 ×	Device Ethernet	1 XB6_EI0002 X									
Test_P20D											
Device (CODESYS Control Win V3 x64)	General	Connection Name	RPI (ms) O	->T Size (Bytes)	T>O Size (Bytes)	Proxy Config	Size (Bytes)	Target Confi	ia Size (Bytes)	Connecti	ion Path
PLC Logic	Connections	1. Exclusive Owner	10 12		24	, ,		158		20 04 24 9	7 20 96 20
Application											
- 💼 Library Manager	Assemblies										
PLC_PRG (PRG)	User Defined Decemptors										
E Task Configuration	Oser-Dermed Parameters										
ENIPScannerIOTask (IEC-Tasks)	Log										
년] EtherNet_IP_Scanner.IOCycle		<									
ENIPScannerServiceTask (IEC-Tasks)	EtherNet/IP I/O Mapping	Add Connection	Delete Connectio	Edit Conn	ection						
	EtherNet/IP IEC Objects	Configuration Data									Defaulte
DLC_PRG	Status	Raw data values	Show Parameter Gr	oups							Dergoire
Ethernet (Ethernet)		Parameters		Value		Unit	Data Type	Minimum	Maximum	Default	Help S
Ethernet (Ethernet)	Information	Parameters		Value		Unit	Data Type	Minimum	Maximum	Default	Help S
Ethernet (Ethernet) EtherNet_JP_Scanner (EtherNet/IP Scanner) XB6_E10002 (XB6-E10002)	Information	Parameters Exclusive Owner E- Target Config	g data	Value		Unit	Data Type	Minimum	Maximum	Default	Help S
Image: Strength (Ethernet) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner) Image: Strength (EtherNet, IP_Scanner)	Information	Parameters Exclusive Owner Target Config Hold or Cle	g data ar Paramter	Value		Unit	Data Type	Minimum 0	Maximum 1	Default 0	Help S
Image: Ethernet (Ethernet) Image: Image: EtherNet, IP, Scanner (EtherNet/IP Scanner) Image: Image	Information	Parameters Exclusive Owner Target Config Hold or Cle DLE Status	g data ar Paramter s Output Mode	Value Clear Clear		Unit	USINT USINT	Minimum 0 0	Maximum 1 1	Default 0 0	Help S Hold:1 Hold:1
Ethernet (Ethernet) Ethernet (Ethernet)/ Ethernet (Ethernet/IP Scanner) K86_E10002 (K86-E10002)	Information	Parameters Exclusive Owner Target Config Hold or Cle DUE Statur Digtal Inpu	g data ar Paramter s Output Mode t Filter Config	Value Clear Clear Filter Tim	ie 3ms	Unit Filter Unit:ms	Data Type USINT USINT USINT	Minimum 0 0 0	Maximum 1 150	Default 0 0 3	Help S Hold:1 Hold:1
Ethernet (Ethernet) Ethernet (Ethertiet,IP Scamer) Ethertiet,IP Scamer) Mass_E10002 (NaseE10002)	Information	Parameters Exclusive Owner Exclusive Owner Fuller Config Hold or Cle Digtal Inpu Analog Inpu	g data ar Paramter s Output Mode t Filter Config ut Filter Config	Value Clear Clear Filter Tim 10	ie 3ms	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT	Minimum 0 0 0 1	Maximum 1 150 200	Default 0 0 3 10	Help S Hold:1 Hold:1
∰ Ethernet (Ethernet) ≌ ∰ Etherlet_P_Scamer (Etherliet/P Scamer) ⊨ <mark>∰ 366_ES0002 (066-E0002)</mark>	Information	Parameters	g data ar Paramter s Output Mode t Filter Config ut Filter Config age Input Range Sele	Clear Clear Filter Tim 10 ect -10V~10	ie 3ms V -32768~32767	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0	Maximum 1 150 200 3	Default 0 0 3 10 0	Help S Hold:1 Hold:1
월 Ebenet(Ethemet) ※ 웹 Etherlety, Scarner (Etherlet/P Scarner) ☑ 186,50002 (86+60002)	Information	Parameters	g data ar Paramter s Output Mode t Filter Config ut Filter Config age Input Range Sele tricity Input Range Se	Clear Clear Filter Tim 10 tct -10V~10 elect 4~20mA	ie 3ms W -32768~32767 0~65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0 0 0	Maximum 1 150 2000 3 3 3	Default 0 0 3 10 0 0	Help S Hold:1 Hold:1
∰ Efferent () ≥ ∰ Efferent () Same (Effertel/P Same) - ∰ Toe 10002 (06 €10002)	Information	Parameters	y data ar Paramter s Output Mode t Filter Config ut Filter Config age Input Range Sele thicity Input Range Sel age Ouput Range Sel	Clear Clear Filter Tim 10 tct -10V~10 elect 4~20mA ect -10V~10	ie 3ms V -32768~32767 0~65535 V -32768~32767	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0 0 0 0 0 0	Maximum 1 150 200 3 3 3 3	Default 0 0 3 10 0 0 0 0	Help S Hold:1 Hold:1
 ☐ Effert(1) 3 Effect(2) Scare (Effect(2) Scare) 3 36, 13002 (06+63002) 	Information	Parameters Exclusive Owner Torest Config Hold or Cle IDLE Statu Digital Inpu Analog Title Analog Title Analog Stel	y data ar Paramter s Output Mode t Filter Config ut Filter Config age Input Range Sel christy Input Range Sel age Ouput Range Sel age Ouput Range Sel tristly Output Range	Value Clear Clear Clear 10 tet -10V~10 elect 4~20mA ect -10V~10 Select 4~20mA	e 3ms W -32768~32767 O-65535 W -32768~32767 O~65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0 0 0 0 0 0	Maximum 1 1 150 200 3 3 3 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5	Default 0 3 10 0 0 0 0	Help S Hold:1 Hold:1
∰ Eferent () ⇒ ∰ Eferent () _Same (Effertel/P Same) → ∰ xec 30002 (06-00003)	Information	Parameters Exclusive Owner Target Config Hold or Cle Digital Inpu Analog Inpu Temperaha	g data ar Paramter 5 Output Mode t Filter Config ut Filter Config ut Filter Config age Input Range Sel tricity Input Range Sel tricity Input Range Sel tricity Output Range tricity Output Range re IO Module Sensor 1	Value Clear Clear Filter Tim 10 ect -10V~10 elect 4~20mA ect -10V~10 Select 4~20mA set -10V~10	ne 3ms V -32768~32767 0~65535 V -32768~32767 0~65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT	Minimum 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Maximum 1 1 1 1 50 200 3 3 3 3 1 4 1	Default 0 3 10 0 0 0 0 0 0	Help S Hold:1 Hold:1
 3 Ebenet Sector (Sector) 3 Ebenet Sector (Sector) 3 Sector (Sector) 	Information	Parameters Foclasive Owner Foclasive Owner Foclasive Owner Hold or Cla DLE Statu Dupt Inpu Analog Inp Analog Inp Analog Inp Analog Inp Analog Volt Analog Volt Temperatu Temperatu	y data ar Paramter = Output Mode = Filter Config ut Filter Config age Input Range Sel age Output Range Sel tricity Input Range et to Module Sensor 1 re IO Module Filter C	Value Clear Clear Filter Tim 10 ect -10V~10 elect 4~20mA elect -10V~0 Select 4~20mA Select 4~20mA	e 3ms V -32768-32767 O-65535 V -32768-32767 O-65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Maximum 1 1 1 1 50 200 3 3 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Default 0 3 10 0 0 0 0 0 0 1 1	Help S Hold:1 0 Hold:1 0
∰ Efferent() ⇒ ∰ Efferent() _Same (Effertel() ³ Same) → ∰ Wei, 20002 (06 e20002)	biformation	Parameters Exclusive Owner Target Config Hold or Cle Digtal Inpu Analog Inpu Analog Val Analog Val Analog Val Analog Val Analog Val Temperatu Temperatu I Di Modale	y data ar Paramter i Output Mode Filter Config age Input Range Sel tricity Input Range Sel tricity Output Range se tricity Output Range re IO Module Sensor 1 i	Value Clear Clear Clear Filter Tim 10 text -100/~10 select 4~20mA select PT100 nifig 1 None	ie 3ms V - 32268 - 32767 0 - 65535 V - 32268 - 32767 0 - 65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT USINT USINT USINT USINT	Minimum 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0	Maximum 1 1 1 150 2000 3 3 3 3 3 14 10 4294967295	Default 0 3 10 0 0 0 0 0 0 1 1 0	Help S Hold:1 0 Hold:1 0
3 396 E10007 (684-630003) 3 396 E10007 (684-630003) 3 396 E10007 (684-630003) 3 Etherlef 2 Secure (Expended)	beformation	Parameters Exclusive Owner Target Config Hold or Cle Dig I Double Analog Irol Analog Vol Analog Vol Analog Vol Analog Vol Analog Vol Analog Vol Temperatu Temperatu To Module: To Modul	y data ar Paramter s Output Mode t Filter Config ut Filter Config age Input Range Sel drintly Poutput Range Sel drintly Output Range trintly Output Range re IO Module Sensor i re IO Moduler Filter C t	Value Clear Clear Filter Tim 10 set -10V~10 select 4~20nA Select PT 100 None None	re 3ms W -32768~32767 Q~65535 V -32768~32767 Q~65535	Unit Filter Unit:ms Filter Unit:Times	Data Type USINT USINT USINT USINT USINT USINT USINT USINT USINT USINT USINT	Minimum 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Maximum 1 1 1 50 200 3 3 3 3 3 14 10 4294967295 4294967295	Default 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Help S Hold:1 Hold:1 Select N Select N

b. Modify the parameter value to add the I / O module in order according to the system configuration, as shown in the figure below.

	Connection Name	RPI (ms)	O>T Siz	e (Bytes)	T>O Si	ze (Bytes)	Proxy Co	onfig Size (Bytes)	Target Conf	a Size (Bytes)	Connectio	on Path
5	1. Exclusive Owner	10	12		24				158		20 04 24 9	7 2C 96 2C 64
									100			
ed Parameters												
	<			XB6-0016A		•						
	Add Connection	Delete Con	nection	XB6-00168	(W)							
I/O Mapping	Configuration Data			XB6-32008								
IEC Objects		Chan Deserved		XB6-1600A XB6-1600B	1							Defaulte
ice objects		Show Paramet	ter Groups	XB6-0800A XB6-0800B		-			1	1		Derduita
	Parameters			XB6-0008A			Unit	Data Type	Minimum	Maximum	Default	Help S *
	P04A Startu	o Speed		XB6-00086 XB6-A80V(W)			UDINT	0	200000	1	
	P04A Return	To Zero Mode		XB6-A40V(W)			UDINT	0	3	2	
	P04A Return	To Zero Speed	ł	XB6-A40I(N)			UDINT	0	200000	1000	
	P04A Return	To Zero Appro	ach Speed	XB6-A80Th	1			UDINT	0	200000	500	
	P04A Pulse M	lode		XB6-A08V(w)			UDINT	0	1	0	
	P04A Input L	ogic		XB6-A04V(W)			UDINT	0	1	0	
	C01SP Comm	nunicate Mode		XB6-A04I(N)			UDINT	0	5	0	
	C01SP Serial	Baud		XB6-C01SF XB6-VT16				UDINT	0	7	7	
	C01SP Serial	Stop		XB6-DS506	iC			UDINT	0	1	0	
	- C01SP Serial	Parity		X86-P04A X86-P20D				UDINT	0	2	0	
	C01SP Serial	WordFormat		XB6-P20D1				UDINT	0	1	0	
	- C01SP Modb	us Slave ID		XB6-00324	N			UDINT	1	247	1	
	C01SP Modb	us Slave Respo	nd Delay	XB6-3200N XB6-0032B	N	~		UDINT	0	65535	50	
	IO Module 1			None				UDINT	0	4294967295	0	Select M
	IO Module?			None				UDINT	0	4294967295	0	Select M
	10 PRODUCE											

c. The configuration parameter setting area of the XB 6-P20D module, as shown in the following figure.

Raw data values 🗹 Show Parameter Groups	11	Transmission	lare the second				<u>J</u> eraults
ameters	Value	Unit	Data Type	Minimum	Maximum	Default	Help S
IDLE Status Output Mode	Clear		USINT	0	1	0	Hold:1 (
Digtal Input Filter Config	Filter Time 3ms	Filter Unit:ms	USINT	0	150	3	
Analog Input Filter Config	10	Filter Unit:Times	USINT	1	200	10	
Analog Voltage Input Range Select	-10V~10V -32768~32767		USINT	0	3	0	
Analog Electricity Input Range Select	4~20mA 0~65535		USINT	0	3	0	
Analog Voltage Ouput Range Select	-10V~10V -32768~32767		USINT	0	3	0	
Analog Electricity Output Range Select	4~20mA 0~65535		USINT	0	3	0	
Temperature IO Module Sensor Select	PT100		USINT	0	14	0	
Temperature IO Moduler Filter Config	1		USINT	1	10	1	
P20D(1) Encoder 1 Resolution	0		UINT	0	65535	0	
P20D(1) Encoder 2 Resolution	0		UINT	0	65535	0	
P20D(1) Encoder 1 Filter	7		UINT	0	15	7	
P20D(1) Encoder 2 Filter	7		UINT	0	15	7	
P20D(1) Encoder 1 Count Multiples	4 Double counting		UINT	1	4	4	
P20D(1) Encoder 2 Count Multiples	4 Double counting		UINT	1	4	4	
P20D(1) Encoder 1 Count Range	0 ~ 4294967295		UINT	0	1	0	
P20D(1) Encoder 2 Count Range	0 ~ 4294967295		UINT	0	1	0	
P20D(1) Encoder 1 Latch Signal	0		UINT	0	15	0	
P20D(1) Encoder 2 Latch Signal	0		UINT	0	15	0	
P20DS 16Bit Data Format	0		UDINT	0	1	0	

d. Click the menu bar "Online-> Multiple Download", display the multiple download window, select "Always Do Full Download", and click "OK", as shown in the figure below.

<u>File E</u> dit <u>V</u> iew <u>P</u> roject <u>B</u> uild <u>Online</u> <u>D</u> ebug	<u>T</u> ools <u>W</u> i	ndow <u>H</u> elp	
🛅 📽 🖬 🕌 🗠 여 🕹 🖻 🛍 🗙 👫 🌿 🕌	川州州州	🕞 🛅 - 👸 I 🛗 Application [Device: PLC Logic] - 🧐 💜 🕨 🔳 🔏 🗌	i ei și și și
Devices • # × Test_P200 Device (CODESYS Control Win V3 x64) PLC Logic PLC_PRG PLC_PRG EtherNet_IP_Scanner.IOCyde EtherNet_IP_Scanner.ServiceCyde MainTask (IEC-Tasks) PLC_PRG EtherNet_IP_Scanner.ServiceCyde EtherNet_IP_Scanner EtherNet_IP_Scanner EtherNet_IP_Scanner Image: TetherNet_IP_Scanner Image: TetherNet_I	General Connections Assemblies User-Defined F Log EtherNet/IP I/O EtherNet/IP IE	Image:	>O Size (Bytes)
	Status	Online change options If the application in the project differs from the application already present on the PLC, then behave as follows: Iry to perform an online change. If this is not possible, perform a full download. Eorce an online change. If this is not possible, cancel the operation Image: Always perform a full download If an application is not yet present on the PLC, a full download is always performed.	12768~32767 55535 12768~32767 55535
		Additional operations	inting inting 7295 7295
Sevices POUs			

e. After the download, click, system online. 🥵

8. Check the equipment indicator lamp

XB 6-P2000H: P lamp, green always light.

XB 6-El0002: P lamp is always green, L lamp is always on, E lamp is not on, N lamp is always on. I / O module: P is always on and R is always on.

9. Data monitoring

- a. Click the button, log out, and switch to the E ther N et / IPI / O Mapping tab.
- b. In the lower right drop-down list, select Enabling 1 mode.
- c. $\overset{\ref{eq:Click Login, and the monitoring page is shown in the figure below.}$

