

EtherCAT XB6 Series Slice I/O

User Manual



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1 Product Features

1.1 Product overview

XB6 series slice I/O modules feature a combination of couplers and I/O modules. The couplers connect extendable I/O modules to a real-time industrial Ethernet system. The I/O modules communication backplane is equipped with X-bus with high real-time performance and a variety of modules. It helps users collect high-speed data, optimize system configuration, simplify field wiring, and improve system reliability.



1.2 Product features

Fewer nodes required

A node consists of a bus coupler, 1~32 X-bus series I/O modules and an end cover.

Flexible configuration

Multiple types of slice I/O modules are offered for free combination.

Diverse functional expansion options

Flexible expansion is supported, and a complete range of IO types are provided. It is possible to integrate digital, analog, temperature, pulse and other modules to meet different application needs.

High compatibility

The coupler communication interface conforms to industrial Ethernet communication standards and supports mainstream EtherCAT master stations.

Support to parameter configuration

Parameters can be configured and automatically saved.

High speed

X-bus on the backplane leads to a maximum scan cycle of 1 ms.

Easy diagnosis

An innovative channel indicator design is adopted. As the indicators are placed close to the channels, channel status is displayed intuitively and clearly, facilitating detection and maintenance.

2 Designation Rules

2.1 Designation rules

2.1.1 Coupler designation rules



2.1.2 I/O module designation rules



I/O characteristics				
Digital		Analog		
Code	Input	Output	Code	
Α	NPN	NPN, 0.25 A	V	-10~+10 V, 0~+10 V
В	PNP	PNP, 0.5 A	I	4~20 mA, 0~20 mA
BW	PNP	PNP, 0.25 A	VW	-10~+10 V, 0~+10 V
Ν	NPN/PNP		IW	4~20 mA, 0~20 mA
AN		NPN, 0.25A	тм	Thermo resistor,
				thermocouple
BN		PNP, 0.5A		

2.2 List of common modules

Model	Product description		
XB6-EC2002ST	EtherCAT coupler kit (power supply, coupler)		
XB6-P2000	Extended power module		
XB6-3200A/B	32-channel digital input module, N	IPN/PNP type	
XB6-0032A/B/BW	32-channel digital output module,	NPN/PNP type	
XB6-1600A/B	16-channel digital input module, N	IPN/PNP type	
XB6-0016A/B/BW	16-channel digital output module,	NPN/PNP type	
XB6-0800A/B	8-channel digital input module, NPN/PNP type		
XB6-0008A/B/BW	8-channel digital output module, NPN/PNP type		
XB6-1616A/B/BW	16-channel digital I/O module, NPN/PNP type		
XB6-3200N	32-channel digital input, NPN/PNP compatible		
XB6-0032AN	32-channel digital output, NPN type		
XB6-0032BN	32-channel digital output, PNP type		
XB6-0012J	12-channel relay output module		
XB6-A80V	8-channel analog input module		
XB6-A40V	4-channel analog input module	Optional ranges: 0~+10 V, -10~+10 V	
XB6-A08V	8-channel analog output module		

XB6-A04V	4-channel analog output module		
XB6-A80I	8-channel analog input module		
XB6-A40I	4-channel analog input module		
XB6-A08I	8-channel analog output module	Optional ranges: 0~20 mA, 4~20 mA	
XB6-A04I	4-channel analog output module		
XB6-A80VW	8-channel analog input module		
XB6-A40VW	4-channel analog input module		
XB6-A08VW	8-channel analog output module		
XB6-A04VW	4-channel analog output module		
XB6-A80IW	8-channel analog input module		
XB6-A40IW	4-channel analog input module		
XB6-A08IW	8-channel analog output module	Optional ranges: 0~20 mA, 4~20 mA	
XB6-A04IW	4-channel analog output module		
XB6-A40TM	4-channel thermal resistor and thermocouple temperature collection module		
XB6-A80TM	8-channel thermal resistor and thermocouple temperature collection module		
XX6-C18_2	Common terminal extended module		

3 Product Parameters

3.1 General parameters

General technical parameters			
Size	Power module	106061022.5 mm	
	Coupler module	106061022.5 mm	
	I/O module	106073025.7 mm	
Weight	power module	110 g	
	coupler module	80 g	
	I/O module	90 g	
Working temperature	-10~+60 ℃		
Storage temperature	-20 ℃~+75℃		
Relative humidity	95%, non-condensing		
Protection degree	IP20		

3.2 Power parameters

Power parameters			
power module	Working power supply	18~36 VDC	
	Output voltage	5 VDC	
	Output current	2 A, 4 A	
coupler module	Working power supply	5 VDC	
	Working current	400 mA	
I/O module	Working power supply	5 VDC	

3.3 Interface parameters

EtherCAT interface parameter		
Bus protocol	EtherCAT (MDP)	
Number of I/O stations	Depending on master station configuration	
Data transmission	Ethernet/EtherCAT CAT5 cable	
medium		
Transmission distance	≤100 m (distance between stations)	
Transmission rate	100 Mbps	

20RJ45

3.4 Digital parameters

Bus interface

Signal type			
Digital input			
	Rated voltage	24 VDC (±25%)	
	Number of signal points	8, 16, 32	
	Signal type	NPN/ PNP	
	"0" signal voltage (PNP)	-3~+3 V	
	"1" signal voltage (PNP)	15~30 V	
	"0" signal voltage (NPN)	15~30 V	
	"1" signal voltage (NPN)	-3~+3 V	
	Input filtering	3 ms (default)	
	Input current	4 mA	
	Isolation method	Optically-coupled isolation	
	Isolation withstand voltage	500 V	
	Channel indicator	Green LED	
Transistor output			
	Rated voltage	24 VDC (±25%)	
	Number of signal points	8, 16, 32	
	Signal type	NPN/ PNP	
	Load type	resistive load, inductive load	
	Single-channel rated current(A/B)	Max: 500 mA	
	Single-channel rated current(BW)	Max: 250 mA	
	Port protection	Overvoltage and overcurrent	
		protection	
	Isolation method	Optically-coupled isolation	
	Isolation withstand voltage	500 V	
	Channel indicator	Green LED	
Relay output			
	Rated voltage	24 VDC (±25%)	
	Number of signal points	12	
	Isolation method	Optically-coupled, relay	
	Rated load	5 A	
	Channel indicator	Green LED	

3.5 Analog parameters

3.5.1 Technical parameters

Туре			
Analog input	Number of input points	4, 8	
	Input signal (voltage type)	0~+10 V, -10 V~+10 V	
		(adjustable range)	

	input signal (current type)	0~20 mA, 4~20 mA	
		(adjustable range)	
	Resolution	16 bit	
		Ax0V	≤1 ksps
		Ax0VW	≤62.5 sps
	Sampling rate	Ax0I	≤1 ksps
		A40IW	≤100 sps
		A80IW	≤62.5 sps
		Ax0V	±0.1%
		Ax0VW	±0.3%
	Accuracy	Ax0I	±0.1%
		Ax0IW	±0.3%
	Input impedance (voltage	≥2 kΩ	
	lype)	100.0	
	type)	100 12	
	Isolation withstand	500 V	
	Channel indicator	Groon LED	
Tomporaturo			
input	Sonor type	4, o	Thormal register
input			
		R 200~1370 €	Pt100200~600 C
		J 200~1200 C	Pt200: -200~600 ℃
		E200~1000 €	Pt300200~000 C
		B : 50, 1800°C	P11000200~000 C
	Resolution	16 bit	
	Sonsitivity		
	Chappel indicator		
Analog output		4, 0	
		$0 \rightarrow 10^{\circ}$, $-10 \rightarrow 10^{\circ}$	
	Output signal (current		
		0~20 IIIA, 4~20 IIIA	
	Resolution		
		>2 40	
	type)	~Z N12	
	Load impedance (current	<200.0	
	type)	=200 12	
		ΔΟχ	+0.1%
			Not available
	Accuracy		+0.1%
			+0.3%
	1		10.070

Isolation withstand	500 V	
voltage		
Channel indicator	Green LED	

3.5.2 Voltage I/O range selection and code value table

Voltage I/O range selection and cold value range					
Range selection	0	1	2	3	
Range	-10 V~+10 V	0~+10 V	-10 V~+10 V	0~+10 V	
Code value range	-32768~32767	0~32767	-27648~27648	0~27648	
Voltage input	D-(65525/20)*L	D (22767/40)*11	D (FE206/20)*11	D_(27649/10)*11	
formula	D=(03333/20) 0	D=(32707710) 0	D=(33290/20) 0	D=(27048/10) 0	
Voltage output		U_(D*10)/22767		U_(D*10)/27649	
formula	0=(D 20)/03555	0=(D 10)/32707	0=(D 20)/33290	0=(D 10)/27048	
Code value table	See Table 1 Voltage				

Note: D: code value; U: voltage

Table 1 Voltage code values

Range	0 (default)	1	2	3
voltage	Code value	Code value	Code value	Code value
-10	-32768		-27648	
-9	-29491		-24883	
-8	-26214		-22118	
-7	-22937		-19354	
-6	-19661		-16589	
-5	-16384		-13824	
-4	-13107		-11059	
-3	-9830		-8294	
-2	-6554		-5530	
-1	-3277		-2765	
0	0	0	0	0
1	3277	3277	2765	2765
2	6554	6553	5530	5530
3	9830	9830	8294	8294
4	13107	13107	11059	11059
5	16384	16384	13824	13824
6	19661	19660	16589	16589
7	22937	22937	19354	19354
8	26214	26214	22118	22118
9	29491	29490	24883	24883
10	32767	32767	27648	27648
	Code value=	Code value=	Code value=	Code value=
	(65535/20) *voltage	(32767/10) *voltage	(55296/20) *voltage	(27648/10) *voltage
	voltage= (Code	voltage= (Code	voltage= (Code	voltage= (Code

	value*20) /65535	value*10) /32767	value*20) /55296	value*10) /27648
--	------------------	------------------	------------------	------------------

3.5.3 Current I/O range selection and code value table

Analog current I/O range selection and code value range						
Range	0	1	2	3		
selection						
Range	4~20 mA	0~20 mA	4~20 mA	0~20 mA		
Code value	0~65535 0~27648					
range						
Current input	D-65525/16*L 16294	D (65525/20)*I	D=(27648/16)*I-619	D-(27648/20)*I		
formula	D=05555/101-10364	D=(05555/20) 1	2	D=(27040/20) 1		
Current output	I=(D+16384)*16/6553	L_(D*20)/65525	I=((D+6192)*16)/276	L_(D*20)/27649		
formula	5	I=(D 20)/05555	48	I=(D 20)/27040		
Code value	Cas Table 2 Ourrest and a value					
table	See Table 2 Current code value					

Note: D: Code value; I: current

Table 2 Current code value

Range	0 (default)	1	2	3
selection	4-20mA	0-20mA	4-20mA	0-20mA
Range current	Code value	Code value	Code value	Code value
0		0		0
1		3277		1382
2		6554		2765
3		9830		4147
4	0	13107	0	5530
5	4096	16384	1728	6912
6	8192	19661	3456	8294
7	12288	22937	5184	9677
8	16384	26214	6912	11059
9	20479	29491	8640	12442
10	24575	32768	10368	13824
11	28671	36044	12096	15206
12	32767	39321	13824	16589
13	36863	42598	15552	17971
14	40959	45875	17280	19354
15	45055	49151	19008	20736
16	49151	52428	20736	22118
17	53247	55705	22464	23501
18	57343	58982	24192	24883

19	61439	62258	25920	26266
20	65535	65535	27648	27648
21	65535	65535	29376	29030
22			31104	30413
22.81423611			32511	31538
22.96238426			32767	31743
23			32767	31795
23.51779514				32511
23.70298032				32767
24				32767
25				
		Code value=	Code value=	Code value=
	Code	(65535/20)	(27648/16)	(27648/20)
	value=65535/16*current-16384	*current	*current-6912	*current

Notes:

In Range 2, when input current > 22.81 mA, the code value displayed is always 32767; when the specified Code value > 32511, the output current is always 22.81 mA.

In Range 3, when input current > 23.52 mA, the code value displayed is always 32767; when the specified code value > 32511, the output current is always 23.52 mA.

3.6 Common terminal expansion module parameters

Common terminal				
Rated voltage	125 VDC/AC 250V			
Rated current	8 A			
Number of common terminals	2 sets			

4 Panel

4.1 Coupler panel

The name and function of different coupler parts will be described in this section.



Descr	Description of IDs and indicators of the power part				
ID	Name	Color	Indicator status	Meaning	
Р	5V indicator	Green	ON	Normal status of working power	
				supply	
			Flashing	80% overload. The power supply	
				to real stage load is cut off.	
			OFF	Unpowered or abnormal power	
				supply	
0	Overload	Red	OFF	No overload	
	indicator		ON	90% overload	
			Flashing	80% overload. The power supply	
				to real stage load is cut off.	

Desc	Description of IDs and indicators of the system part				
ID	Name	Color	Status	Meaning	
Р	Power	Green	ON	Normal status of working power	
	indicator			supply	
			OFF	Unpowered or abnormal power	
				supply	
L		Green	OFF	In initialization or unpowered	
			ON	X-bus in the process of interaction	
			Flashing: 1 Hz	Normal initialization of bottom bus	
			Flashing: 5 Hz	Abnormal initialization of bottom	
				bus	
			Flashing: 10 Hz	Loss of response of an I/O module	
				during operation	
Е	Error	Red	ON	Abnormal coupler status	
	indicator				
			OFF	In initialization, unpowered, or no	
				error	
R		Green	OFF	In initialization or unpowered	
				EtherCAT Init status	
			ON	EtherCAT OP status	
			Flashing: 5 Hz	EtherCAT PreOP status	
			Flashing: OFF for	EtherCAT SafeOP status	
			1 s, ON for 200 ms		
IN		Yellow	Flashing	Connection established with data	
				interaction	
			OFF	No data interaction or abnormal	
				status	
OUT		Yellow	Flashing	Connection established with data	
				interaction	
			OFF	No data interaction or abnormal	
				status	

4.2 I/O module panel

The name and function of different module parts are described in this section.



Indicator descri	ption		
Р	Green	ON	Normal status of working power supply
		OFF	Unpowered or abnormal power supply
R	Green	ON	Normal system operation
		Flashing	I/O module connected, X-bus system ready for
		1 Hz	interaction
		OFF	Unpowered, no X-bus data interaction, or
			abnormal status
Input channel	Green	ON	Presence of signal input in module detection
indicator			channel
		OFF	Absence of signal input in module channel or
			abnormal signal input
Output channel	Green	ON	Presence of signal output in module channel
indication			
		ON/OFF	Absence of signal output in module channel or
			abnormal signal output

5 Installation and Disassembly

5.1 Installation instructions

Module installation precautions

- Ensure that the cabinet is well ventilated.
- Do not install this equipment near or above any equipment that may cause overheating.
- Make sure to install the module vertically and maintain adequate air circulation around it (at least 50 mm air circulation space should be provided above and below the module).
- After the modules are installed, remember to install guide rail fasteners at both ends to fix them.
- Installation/disassembly operation may only be carried out after the power supply is cut off.

Minimum clearance for module installation (≥50 mm)



Make sure the modules are installed vertically



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Make sure to install guide rail fasteners



5.2 Application configuration



Application method:

Different modules can be combined, including power supply, coupler, digital, analog, relay, temperature, pulse, encoder interface, step driver and other modules.

Application configuration:

Different I/O module combinations can be adopted depending on master station access capacity, number of stations, I/O points, function type, and other requirements.

Configuration rule:

From left to right, the modules should be arranged in the order of power supply, coupler module, I/O module, and end cover (required).

Module installation	Module installation and disassembly			
Module	1.	Install the power module on the fixed guide rail first.		
installation	2.	Install the coupler and the required I/O modules on the right side		
steps		of the power module.		
	3.	After installing all required I/O modules, install the end cover to		
		complete module assembly.		
	4.	Install guide rail fasteners at both ends of the power module and		
		end cover to fix the module.		
Module	1.	Loosen the rail fasteners at both ends of the module.		
disassembly	2.	Pry loose the module snap fitting with a slotted screwdriver.		
steps	3.	Pull out the removed module.		

5.3 Installation and disassembly steps

5.4 Installation schematic diagrams

I. Power module installation

1. Align the power module guide rail slot vertically with the guide rail, as shown below.



2. Press the power module with force until a "click" sound is heard. The module is now installed in place, as shown in the figure below.



II. Coupler module installation

1. Align the left slot of the coupler module with the right side of the power module, and push it in as shown below.



2. Press the module with force into the guide rail until a "click" sound is heard. The module is now installed in place.

III. I/O module installation

Install the required IO modules one by one using the same the steps as coupler module installation.





IV. End cover installation

Install the end cover on the right side of the last module using the same installation method as the coupler module.



V. Installation of guide rail fasteners

1. Install a guide rail fastener next to the left side of the coupler, and lock it tightly.



2. Install a guide rail fastener on the right side of the end cover. In this process, first push the guide rail fastener towards the coupler to ensure that the module is installed firmly, and then lock the fastener with a screwdriver.



VI. Disassembly (with a slotted screwdriver)

1. Using a screwdriver, loosen the guide rail fastener at one end of the module, and move it to one side to create a gap between the module and the fastener.



Insert the slotted screwdriver into the snap fitting of the module to be removed, and exert force along lateral direction of the module (until a click sound is heard).
 Note: Each module has two snap fittings, one on the top and the other at the bottom. Both should be operated in this way.





3. Remove the module in the reverse order of installation.



5.4 Dimensions

Power module dimensions



Installation method

DIN 35 mm guide rail installation

Coupler dimensions

Installation method



-25.70-

DIN 35 mm guide rail installation

73

22. 25.7

End cover dimensions

61.00

Installation method



*DIN guide rail dimensions: 35*7.5*1.0, 35*15*1.0

6 Wiring

6.1 Wiring terminal

Wiring terminal		
Signal wire terminal	Number of poles	16 P
	Number of poles	20 P
	Wire gauge	28 -16 AWG 0.2-1.5 mm ²
Power terminal	Number of poles	3P
	Wire gauge	26 -12 AWG 0.5-2.5mm ²
Bus interface	2*RJ45	Category 5 or better UTP or STP (STP
		preferred)

6.2 Wiring instructions and requirements

Power wiring precautions



- The power supply on the module system side and that on the field side should be wired separately. Mixing should be avoided.
- PE should be grounded reliably.

Tool and wiring requirements

Wiring tool required	
As the terminals are based on a screw-free	5
design, cable installation and removal can	
realized with a slotted screwdriver (size: \leq 3	
mm).	\$3nn } [
	``````````````````````````````````````
Stripping length required	
Recommended stripping length: 10 mm	
Wiring method	
For a single-strand hard wire, after stripping a	
required length, press the button while inserting	
the single-strand wire.	
For a multi-strand flexible wire, after stripping a	
required length, directly connect it or use a	FIGS.
compatible cold-pressed terminal (tubular	And a state of the
insulated terminal, as shown in the table below).	
Press the button whiling inserting the wire.	

Specification of tubular insulated terminal		
Specification	Model	Cable section area
		(mm²)
<i>A</i>	E0510	0.5
	E7510	0.75
	E7512	0.75
	E1010	1.0
	E1012	1.0
Length of tubular insulated terminal L ≥10 mm	E1510	1 5
Length of tubular insulated terminal L ≥10 mm	E1518	1.0

# Power supply wiring

# 3P terminal of power module

Connect the DC24V power module using the given wiring method based on the circuit shown in the figure below, and meanwhile ground the PE reliably (twisted pair cable is recommended for power supply).

• Wiring of coupler, IO modules, and power module in sequence, as shown below:



 Wiring of coupler, IO modules, power module, IO modules, and power module in sequence, as shown below:



### Load power supply wiring

### 20P terminal on the field side

Press the signal cable into the wiring terminal by referring to the I/O module wiring diagram and wiring method.

24 VDC power supply is used for loads. Using the given wiring method, connect the power supply according to the circuit shown in the left figure. Refer to <u>6.3 I/O module wiring diagram</u> for details.



# Signal terminal wiring

### 16P\20P terminal

Press the signal cable into the wiring terminal by referring to the I/O module wiring diagram and wiring method.

### Bus wiring

# Industrial Ethernet bus communication interface

Standard RJ45 network interface and standard RJ45 connector are adopted. The pins are assigned as follows.



-	
Pin	signal
1	TD+
2	TD-
3	RD+
4	-
5	-
6	RD-
7	-
8	-

- Category 5 or higher-level double-shielded (braided wire + aluminum foil) STP cable is recommended as communication cable.
- The cable between any two devices should not exceed 100 m.

# 6.3 I/O module wiring diagrams

In the course of wiring, only one group of positive and negative poles needs to be connected to respective points.





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### XB6-0800A

# Module panel









8]

[]9 []A

]в [с

[]E

DF

8] []9 []A

_ []В

[]E

<u></u>□F

□+ □-

O R



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XB6-0016B

DO

Output 8

Power 0 V

+241

0∨ 24V

220V

¹¹ | Output 9

0 0

Output 1 | 1 Output 9 Output 2 | 2 Output A Output 2 ¹ ^C Output A Output 3 ¹ Output B

0 0 ۱ 4

0

______

14 Output 5 | Output D Output 6 | Output C Output 6 |  $\stackrel{6}{}_{O}$   $\stackrel{16}{}_{O}$  Output E Output 7 |  $\stackrel{7}{}_{O}$   $\stackrel{17}{}_{O}$  Output F Output 7 | ' Output F Power +24 V 8 18 | Power +24 V

Output 0

Output 1 | 1

Power 0 V







### XB6-0008A

Module panel

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★ 信号线缆:建议采用屏蔽双绞线

Note: The screen printing of module XB6-A40I is XB6-A40I.





Note: The screen printing of module XB6-A04I is XB6-A04I.

# 6.4 Common terminal expansion module wiring diagrams

The wiring method of two-wire and three-wire sensors is described in this section, taking the two modules of XX6-1616A/B as examples.



XX6-1616B	XX6-C18_2	
	сом сом	
Input1; o o include	Input 1	
Input 2 0 0 Input A	Input 2	1
Input 3 0 0 Input B	Input 3 3 11 Input B	
Input 4 4 12 Input C	Input 4 4 12 Input C	
Input 5 5 13 Input D	Input 5 5 13 Input D	
Input 6 6 14 Input E	Input 6 ¹ ⁶ I ¹⁴ Input E	
Input 7 7 15 Input F	Input 7 7 1 15 Input F	
L18_		
DO		
Output 0		
Output 1 Output 9		
Output 2 2 12 Output A		
Output 3 3 13 Output B		
Output 4 4 0 14 Output C		
Output 5 5 15 Output D	5 <u> </u> 15	
Output 6 6 16 Output E	6 Å Å 16	/
Output 7 7 17 Output F	7	
Power +24 V 8 18 Power +24	<u>↓ * ↓ * ↓ * ↓ * ↓ * ↓ * ↓ * ↓ * ↓ * ↓ *</u>	ļ
Power 0 V 9 19 Power 0	y '9 19	
		+241 2201/~
	┟┾──────	
	<u> </u>	24V=

# Wiring method of three-wire sensor (NPN type)



Wiring method of three-wire sensor (PNP type)

XX6-1616B	XX6-C18_2			
DI	СОМ	COM		<b></b>
Input 0, , , , Input 8		Input 8		
Input 1	Input 1	J 9 Input 9		
Input 2 0 10 Input A	Input 2	Input A	(	
Input 3 3 11 Input B	Input 3	11 Input B		
Input 4 4 12 Input C	Input 4	12 Input C		
Input 5 5 13 Input D	Input 5	13 Input D	/	
Input 6 6 14 Input E	Input 6	14 Input E		
Input 7 7 15 Input F	Input 7 7	15 Input F		
	L_₹-	16		
DO				
	сом г			
Output 2	l ¦ į	h آ	1	
Output 3 Output B		4 <u>.</u>	(	
Output 4 4 Output C		↓ ¹⁴		
Output 5 0 0 15 Output D	°	0	)	
Output 6 6 16 Output E	6	16		
Output 7		∱ <del>17</del> ¦		
Power +24 V 8 Power +24	₩ <u></u>	<u></u>		
Power 0 V	y 9	19		
L 10 20 J	T Linj.	j_zoj		+24/ 220/~
	+	)		av l
		5		24V=

# 7 Operation

# 7.1 Module application

# 7.1.1 Application modes

Two combinations are available for the product as shown below, each containing a coupler, I/O modules and an end cover.



Second product end cover)	combination (coupler, I/	O modules,	power module, I/O mod	lules,
Coupler	I/O modulos	Power	I/O modulos	End
	I/O modules	module	I/O modules	cover



The following principles should be adhered to when determining the number of I/O modules:

- The model and number of I/O modules in the system must be configured in such a way that the maximum power consumption is lower than the load current provided by the power module.
- The number of IO modules that can be supported by a coupler is not higher than 32.
- The number of analog modules should not exceed 12, and the number of 8-channel analog inputs should not exceed 8.
- One power supply supports up to 10 I/O devices. If there are more than 10 devices, additional power supplies will be required.

### 7.1.2 Number of power modules configured and power consumption calculation

### Power module configuration principle

The model and number of I/O modules in the system must be configured in such a way that the maximum power consumption is lower than the load current provided by the power module.

After the model and number of I/O modules are determined, calculation can be made by referring to our "**Solidot XB6 Series I/O Power Consumption Calculation Table**", so as to reasonably configure the number of couplers and power modules.

### Website of "Solidot XB6 Series I/O Power Consumption Calculation Table":

https://www.solidotech.com/documents/tools

An example of configuration of couplers and power modules

Models and number of I/O modules required by the system and corresponding power consumption:

Туре	Model	Number	Power consumption			
	XB6-3200A	1	55 mA			
	XB6-1600A	1	50 mA			
	XB6-0032A	4	180 mA			
IO module	XB6-0016A	1	110 mA			
	XB6-1616A	5	120 mA			
	XB6-A80V	1	230 mA			
Total power of	consumption		1685 mA			

# **Conclusion:**

Because the total power consumption of all modules is 1685 mA, which is greater than the 1600 mA current provided by a coupler for I/O modules, it is necessary to add a power supply module.

# 7.2 Coupler functional description

In this chapter, TwinCAT3 software platform is taken as an example to introduce coupler functions.

# **Topological configuration**

The system supports both automatic scan configuration and manual configuration

# • Manual configuration:

Select a target module in SLOT. The specific location varies with the master station.

After adding a coupler, enter **Slots** page and click  $\stackrel{\scriptstyle\checkmark}{}$  and  $\stackrel{\scriptstyle\checkmark}{}$  for topological configuration, as shown in the figure below. For details, please refer to:

7.4.1 Application in TwinCAT3 software environment.

Solution Explorer 🔹 🖣 🗙	TwinCAT Project15 +	× Error List	Command W	findow						-
C C G   C - B   P	General EtherCAT	Process Data Slots	Startup C	oE - Online	Online					î
Solution TurinCAT Project(3) (1 project)     Site of the project(3) (1 project)     Site of the project(3) (1 project(3))     Solution     Solu	Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot Slot		Module X86-3200A X86-0032A X86-A80V	×		dule Digital Inp X86-32 X86-16 X86-08 X86-32 X86-16 X86-08 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00 X86-00	out Termi 008 008 000 000 000 000 000 000 000 100 1	Meduleld anals building bui	Description * 32 Channel 16 Channel 32 Channel 16 Channel 32 Channel 16 Channel 32	*
<ul> <li>Module 1 (N86-2200A)</li> <li>Module 2 (N86-2032A)</li> <li>Module 3 (N86-0332A)</li> <li>Mudule 3 (N86-A80V)</li> <li>With WeState</li> <li>With Module 3 (N86-A80V)</li> <li>Mappings</li> </ul>	Name CouplerState Channel 1 Channel 2 Channel 3 Channel 4	Online 0 0 0	Type UINT BIT BIT BIT	Size 1 2.0 3 0.1 4 0.1 4 0.1 4	Add 39.0 41.0 41.1 41.2	In/Out Input Input Input	User 0 0 0 0	Linked to		Î
	🕈 🐔 Channel 4	0	BIT	0.1 4	41.3	Input	0			

Automatic scan configuration:

For details, please refer to: 7.4.1 Application in TwinCAT3 software environment.

# Parameter configuration

Enable P > S setting to activate parameters.

After adding a coupler, enter "Startup" page and right click to select "Insert" for parameter configuration, as shown in the figure below.



- In the master station, activate the parameter configuration function to configure IO module parameters when creating a project.
- In the master station, use SDO to modify parameters. Upon completion of the operation, the module will be automatically saved and take effect immediately. The parameters will always be kept before the topology is changed.

Note: If the equipment is in OP state, when an output module is modified, the output signal will be cleared and new parameters will be used for operation immediately.

Recommendation: Configure the IO modules using the parameter activation mode. After configuration, power off the system and then power it on again, so as to confirm whether the parameters have been correctly applied.

Solution 'TwinCAT Project15'	(1 project)	Transiti Pr	rotocol Index	Data	Comment			
TwinCAT Project15		C <ps> C</ps>	oE 0xF030 C	0 03 00 26 06 00 00 22 0	download slot	cfg		
MOTION			Edit CANopen	Startup Entry			×	
PLC			Transition				OK	
SAFETY			□1-> P	Index (hex):	2020		SPR	
4 1 VO			MP +> S	S > P Sublinder Idea	2		Caricel	
• 🔤 1/0								
<ul> <li>Bonice 2 (Ether)</li> </ul>	ATD.		□ 5 → 0	Validate	Complete	e Access		
<ul> <li>Im Device 2 (cthert)</li> </ul>	A1)		Data (hashin)	00.00.00.00			Have E effe	
te image			Craid (Hendel);	00 00 00 00			Her LOC.	
b 😤 G			Validate Mask:					
Set Value	Dialog		×	Channel2 Range Setting			Edit Entry	
A 10 million	0							
Dec.	U		01	Name	Flags	Value	^	
# /D B Hex	0x00000000		Cancel	>386-3200A Config	RW	>1<		
P Enum:	-10"+10VI-3276	97-327671	× k01	Channel Debounce Time	RW	3ms (3)		
Þ 🦷	-10*+10VI-3276	8~327671		XB6-A80V Config	RW	> 16 <		
Þ (	0~+10/(0~3276	57)	£01	Channell Range Setting	RW	-10~+10v(-32768~3	2767) (0)	
þ 📹 Book	0"+10/0"2764	18  27648) 181	Edit 102	Channel2 Range Setting	RW	-10~+10V(-32768~3	2767) (0)	
Rinanc	00.00.00.00		4 103	Channels Hange Setting	FW/	-10"+10V(-32768"3	2767][0]	
Þ 🧣				Dannels Range Setting	RW	-10"+104(-32768"3	27671(0)	
Bit Size:	01 08 0	0 16 @ 32 () 64	k06	Channelli Range Setting	BW	-10"+10VI-32768"3	27671101	
Mappings	_	Continuero	2020-07	Channel? Range Setting	RW	-10"+10v[-32768"3	2767) (0)	
	1	Channel 4	2020.08	ChannelB Range Setting	RW	-10"+10v(-32768"3	2767) (0)	
		Channel 5	2020.09	Channell Filter Time	RW	Dx0000000A (10)		
		Channel 6	- 2020 GA	Channel2 Filter Time	RW	Dx0000000A (10)		

# Coupler control word/status word

XB6-EC0002 supports two-byte control word ("CouplerState") and two-byte status word ("CouplerState"), as shown in the table below:

CouplerState	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
						Rese	erved				х	-bus er	ror cod	le disp	lay are	а
[15-4]						Rese	erved									
[3-0]						X-bu	s opera	ation s	tatus, '	"0"indio	ating	normal	lstatus	6.		
CouplerCtrl	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
By writing bit 0 of cor	ntrol w	ord Co	oupler	Ctrl, o	utput											
modules can maintain	n conti	inuous	chan	inel o	utput	Rese	erved									
under abnormal condition	ons.										С	lear/hol	ld			
[15-1]						Rese	erved									
						<b>0:</b> de	fault v	alue, c	learing	g contro	ol.					
						<b>1</b> : ho	lding c	ontrol,	defau	lt value	e:"0".					
[0]						A ch	ange ta	akes ef	fect in	nmedia	tely.					

# 7.3 Module parameter configuration function

In this chapter, TwinCAT3 software platform is taken as an example to introduce module parameters, functions, and configuration methods.

### 7.3.1 Filtering time of digital inputs

Digital input filtering can prevent unexpected rapid changes in program response input signals. Such changes may result from jumping of switch contact or electrical noise. The duration of digital input filtering is currently fixed at 3 ms, and all clutters within 3 ms can be filtered out. Separate channel configuration is not allowed.

The 3 ms input filtering time means that a single signal changing from 0 to 1 or from 1 to 0 can only be detected after 3 ms has lapsed following such change, while a single high pulse or low pulse shorter than 3 ms will not be detected.

### 7.3.2 Analog filtering configuration function

### Analog input filtering function

The analog input filtering function can average the data internally after A/D conversion to reduce the fluctuation effect on input signals due to noise.

Analog inputs are subject to moving average processing based on the specified A/D conversion times.

### **Filtering function configuration**

Each channel can be configured separately. Configuration range: 1~200, default: 10.

Sampling rate of 8-channel module: 1.25 KHZ/8 channels (800 us/8 channels)

Sampling rate of 4-channel module: 2.5 KHZ/4 channels (400 us/4 channels)

Restart is recommended after completion of configuration.

- Single click"TwinCAT Project > I/O > Devices > Device (EtherCAT) > Box 1(XB6-EC002)" to enter the configuration interface, and switch to "Startup" page.
- 2. Right click"Insert", as shown in the figure below.

olution Explorer	- 4 ×	FwinCAT Project2	73 ⊕ ×					
○ ☆ [™]		General EtherC	AT Process Data	Slots S	tartup	CoE - Or	nline On	line
earch Solution Explorer (Ctrl+;)	<u>- م</u>							
PLC		Trans Prot	o Index Da	ata		Comme	ent	
SAFETY		CoE <ps> CoE</ps>	0xF030 02	2 00 <u>83 06</u>	00.0	doumlo	ad slot d	to
6 C++					isert			
🔺 🚾 VO					elete			_
<ul> <li>Devices</li> </ul>				E	dit			
<ul> <li>Device 2 (EtherCAT)</li> </ul>				Ir	nport fr	om XML		
Image				E	xport to	XML		
Timage-Info				🥩 P	rint List		Ctrl+F	>
v  syncomits b  h  h  h h h h h h h h h h h h h h h				ia 9	opy List		Ctrl+C	2
P inputs D Inputs				UA E	xport Li	st		
InfoData				_				
Box 1 (XB6-EC0002)								
Inputs								
Outputs								
<ul> <li>Module 1 (XB6-A04V)</li> </ul>		Name	Online	Туре	Size	>Ad	In/ U	Js Linked to
Outputs		CouplerState	0	UINT	2.0	39.0	Input 0	)
Channel 1		WcState	1	BIT	0.1	152	Input 0	)
Channel 2		InputToggle	1	BIT	0.1	152	Input 0	)
Channel 3		💌 State	257	UINT	2.0	154	Input 0	)
- Channel 4		AdsAddr	102 169 0 12	A LAC A				
A Module 2 (XR6-A04\0)		- Hum talan	192.100.0.12	AIVI3A	8.0	155	Input 0	,
Module 2 (XB6-A04V)	- H	CouplerCtrl	0	UINT	8.0 2.0	155 39.0	Ou 0	
<ul> <li>Module 2 (X86-A04V)</li> <li>Outputs</li> <li>Channel 1</li> </ul>	- 1	CouplerCtrl Channel 1	0	UINT	8.0 2.0 2.0	155 39.0 41.0	Ou 0	1
<ul> <li>Module 2 (X86-A04V)</li> <li>Outputs</li> <li>Channel 1</li> <li>Channel 2</li> </ul>	- 1	CouplerCtrl Channel 1 Channel 2	0 0 0	UINT INT INT	8.0 2.0 2.0 2.0	155 39.0 41.0 43.0	Input 0 Ou 0 Ou 0 Ou 0	, , ,
<ul> <li>Module 2 (X86-A04V)</li> <li>Outputs</li> <li>Channel 1</li> <li>Channel 2</li> <li>Channel 3</li> </ul>		CouplerCtrl Channel 1 Channel 2 Channel 3	0	UINT INT INT INT	8.0 2.0 2.0 2.0 2.0	155 39.0 41.0 43.0 45.0	Input 0 Ou 0 Ou 0 Ou 0 Ou 0	
<ul> <li>Module 2 (X86-A04V)</li> <li>Outputs</li> <li>Channel 1</li> <li>Channel 2</li> <li>Channel 3</li> <li>Channel 3</li> </ul>		CouplerCtrl Channel 1 Channel 2 Channel 3 Channel 4	0 0 0 0 0	UINT INT INT INT INT	8.0 2.0 2.0 2.0 2.0 2.0	155 39.0 41.0 43.0 45.0 47.0	Input 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0	
<ul> <li>Module 2 (X86-A04V)</li> <li>Outputs</li> <li>Channel 1</li> <li>Channel 2</li> <li>Channel 3</li> <li>Channel 4</li> <li>WcState</li> </ul>		CouplerCtrl Channel 1 Channel 2 Channel 3 Channel 4 Channel 1	0 0 0 0 0 -16384	UINT INT INT INT INT INT	8.0 2.0 2.0 2.0 2.0 2.0 2.0	155 39.0 41.0 43.0 45.0 47.0 49.0	Input 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0	
Module 2 (X66-A04V)     Module 2 (X66-A04V)     Work and 1     Channel 1     Channel 2     Channel 3     Work and 4     Work and 4     Module 2     Module 2		CouplerCtrl Channel 1 Channel 2 Channel 3 Channel 4 Channel 1 Channel 1 Channel 1	0 0 0 0 -16384 -16384	UINT INT INT INT INT INT INT	8.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	155 39.0 41.0 43.0 45.0 47.0 49.0 51.0	Input 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0	
<ul> <li>Module 2 (X86-A04V)</li> <li>Module 2 (X86-A04V)</li> <li>Channel 1</li> <li>Channel 1</li> <li>Channel 2</li> <li>Channel 3</li> <li>Channel 4</li> <li>Westate</li> <li>Mappings</li> </ul>		CouplerCtrl Channel 1 Channel 2 Channel 3 Channel 4 Channel 1 Channel 1 Channel 2 Channel 2 Channel 3	0 0 0 -16384 -16384 16384	UINT INT INT INT INT INT INT	8.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	155 39.0 41.0 43.0 45.0 47.0 49.0 51.0 53.0	Input 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0 Ou 0	

3. Double click to select a module of an existing model (**XB6-A80V** in this example), and select the corresponding channel for filtering parameter configuration, as shown in the figure below.

Solution Explorer 🛛 🔻 🕂 🗙	TwinCAT Proj	ect15 ⇔ ×	Error List	Co	ommand \	Nindow		-
© ⊃ ☆ 'o - ₫ 🖋 <u>-</u>	General	H-CAT Des	Data	Class S	Startun (	C-E Online	Opline	
Search Solution Explorer (Ct 🔎	- General E	therCAT Pro	ocess Data	Slots	startup	LOE - Unime	Online	
	Transiti	Protocol	Index	Data		Cor		
MJ Solution TwincAT Project1	iransiu.	Protocol	mdex	Data		CO	nment	
	Edit CANopen St	tartup Entry						×
MOTION	Transition							12
PLC	□I→P		Index (he)	d: 2	2020			IK.
SAFETY		le v p	C	γ	,		Car	ncel
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▲ 🛃 I/O	∐S→O L	_0 → S	Validat	te 🗌	Complete	Access		
▲ [⊕] Devices	Data (baubia):							Edit
🔺 🗮 Device 2 (Ethe	Data (nexum).	Set Value D	ialog				X	E UI(
📑 Image	Validate Mask:	Dec	110			ПК	<b>-</b>	
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SyncUnits		Hex	0x0000000	DA		Cancel	_	
	Index	Float:	1.4012985	5e-44				^
	Ė~ 2000:0	2						
A /D Box 1 (XB6	2000:01	Rook	0	1		Hay Edit		
Inputs	2020:0	0001	2	1		HEX LUK	- 2~327671 (0)	
<ul> <li>Outputs</li> </ul>	2020:02	Binary:	0A 00 00 C	00		4	3~32767) [0]	
🖙 Cour	2020:03	Bit Size:	01 08	3 () 16	32 ()	64 () ?	3~32767) (0)	
🕨 🔷 Module	2020:04	L	,					
🕨 🔷 Module	2020:05	Channel5 Rang	e Setting		RW	-10~+10V(-3	(0) (12768~32767) (0)	
Module	2020:06	Channels Hang	e Setting e Setting		RW/	-10*+10V(-3 -10*+10V(-3	12768**32767) (U) 12768**32767) (O)	
WcState	2020:08	Channel8 Rang	e Setting		BW	-10~+10V(-3	2768~32767) (0)	
P 🛄 InfoDat	2020:09	Channel1 Filter	Time		RW	0x00000004	v (10)	
Mappings	2020:0A	Channel2 Filter	Time		RW	0x00000004	x (10)	~
	<							>

# 7.3.2 Output clearing and holding function

Output holding: When the communication is disconnected, the module output channel will maintain its output.

Output clearing: When the communication is disconnected, the module output channel will clear its output. **Configuration of output emptying and holding function** 

TwinCAT3 software platform is taken as an example here to explain how to configure output holding and clearing function.

- 1. In the tree directory, double click "CouplerCtrl".
- 2. Switch to "Online" page, as shown below.

Solution Explorer 🛛 👻 🕂 🗙	TwinCAT Project15	😐 🗙 Error List	Command Window	•
○ ○ 岱   つ - 司   耂 Search Solution Explorer (Ctrl+;) ク・	Variable Flags	Online		
<ul> <li>Solution 'TwinCAT Project15' (1 project)</li> <li>TwinCAT Project15</li> <li>SSYSTEM</li> <li>MOTION</li> <li>PLC</li> <li>SAFETY</li> <li>C++</li> <li>I/O</li> <li>Pevices</li> <li>Pevices</li> <li>Image</li> </ul>	Value: New Value: Comment:	0 Force	Release	Write
<ul> <li>imagerinio</li> <li>SyncUnits</li> <li>Outputs</li> <li>Outputs</li> <li>InfoData</li> <li>Module 1 (XB6-EC0002)</li> <li>Module 1 (XB6-3200A)</li> <li>Module 2 (XB6-0032A)</li> <li>Module 2 (XB6-A80V)</li> <li>Module 3 (XB6-A80V)</li> </ul>				

3. Single click "Write", and modify the value of "CouplerCtrl".

Set Value Di	alog	×
Dec:	0	JK 💦
Hex:	0x0000 Ca	ncel
Float:		
Bool:	0 1 Hex	Edit
Binary:	00 00	2
Bit Size:	$\bigcirc 1 \ \bigcirc 8 \ \textcircled{0} 16 \ \bigcirc 32 \ \bigcirc 64 \ \bigcirc ?$	

Set Dec to "0": clear output.

Set Dec to "1": hold output.

### 7.3.4 Analog range selection

Range selection function is supported for analog modules. See <u>3.5 Analog parameters</u> for details. TwinCAT3 software is taken as an example in this manual to explain how to configure the range of analog modules.

- 1. In the left navigation tree of the configuration page, select "Box 1(XB6-EC0002)".
- 2. Select an analog module, right click "Insert" and enter "Edit CANopen Startup Entry" page.
- 2. Double click to modify the module channel. A "Set Value Dialog" box will pop up, as shown below. Set the range as needed. After modification, the module should be restarted.

Edit CANopen S	tartup Entry					$\times$
Transition □I -> P ☑ P -> S □ S -> 0	] S → P ] O → S	Index (hex): Sub-Index (dec):	2020 1 Complete Act		OK Cance	l
Data (hexbin):	Set Value Dia	log		×	Hex Edit	
Validate Mask: Comment:	Dec: Hex:	0 0x0000000		OK Cancel	Edit Entr	y
Index	Enum:	-10~+10V(-32768~)	32767)	$\sim$		^
<ul> <li>         2020:0         2020:01         2020:02         2020:03         2020:04         2020:05         2020:05     </li> </ul>	Bool: Binary: Bit Size:	-10~+10V[-32768~; 0~+10V(0~32767) -10~+10V(-27648~; 0~+10V(0~27648) 00 00 00 00 01 08 016	32767) 27648) ;	Edit 4	3~32767) (0) 3~32767) (0) 3~32767) (0) 3~32767) (0) 3~32767) (0)	
2020:06	Channel7 Bange	Setting	BW	-10~+10V(-3276	.3~32767) (U) :8~32767) (O)	
2020:08	Channel8 Range	Setting	BW	-10~+10V(-3276	8~32767) (0)	
2020:09	Channel1 Filter Til Channel2 Filter Til	me	RW BW	0x0000000A (10	)) ))	
2020:0A	Channel2 Filter Til Channel3 Filter Til	ne ne	BW	0x0000000A (10	ŋ Ŋ	
2020:0C	Channel4 Filter Ti	ne	RW	0x0000000A (10	) Ŋ	~
<			<b>_</b>		>	

# 7.4 Bus module configuration description

# 7.4.1 Application in TwinCAT3 software environment

# 1. Preparation

# Hardware environment

A computer installed with TwinCAT3 software

Dedicated EtherCAT shielded cable

A switching power supply

Module installation guide rail and fasteners

The module model and type are shown in the table below:

Туре	Model	Quantity
coupler	XB6-EC2002ST	1
IO module	XB6-3200A	1
	XB6-0032A	4
	XB60032B	1
	XB6-A40V	1
End cover	XB6-CVR00	1

# Device configuration files

Website of configuration files: https://www.solidotech.com/documents/configfile

# Hardware configuration and wiring

Please operate according to "5 Installation and Disassembly and 6 Wiring.

# 2. Add a device configuration file

Place an **ESI** configuration file (e.g. "EcatTerminal-XB6_VX.XX_ENUM.xml") in the installation directory of **TwinCAT**: "C:\TwinCAT\3.1\Config\lo\EtherCAT", as shown below.

	≪ 3.1 → Config → Io → EtherCAT	✔ ひ 搜索"EtherCAT"	م
^	名称	修改日期	^
	Beckhoff EtherCAT Terminals.xml	2015/2/4 12:57	
	Beckhoff FB1XXX.xml	2017/5/24 12:26	
	Beckhoff FCxxxx.xml	2015/2/4 12:57	
	Beckhoff ILxxxx-B110.xml	2015/2/4 12:57	
	EcatTerminal-XB6_V1.15_ENUM.xml	2020/7/28 11:52	×
ς.	<		>

### 3. Add a device

- 1. Start TwinCAT software.
- 2. Single click "New TwinCAT Project" to create a new project, as shown below.

	New TwinCAT Pro	oject		Get Started	Beckhoff Ne	ews			
4	New Measureme	ent Project		4 separate resolution and the first part of program (program (program)) (program (program)) (program (program))	An Exercise or a to g opt to got get get get bot a a g opt to got get get The second seco	What's New	/ in TwinCAT	3	
Q	New Project							?	×
6	▷ Recent		.NET Framew	ork 4.5 👻 Sort	by: Default	- #	E Search	Installed	P
	<ul> <li>Installed</li> <li>Templates         <ul> <li>Other Project</li> <li>TwinCAT Meas</li> <li>TwinCAT PLC</li> <li>TwinCAT Proje</li> <li>Samples</li> </ul> </li> <li>Online</li> </ul>	Types surement ects	Twin	CAT XAE Projec T	winCAT Projects	Type: TwinC TwinCAT XA Configuratio	:AT Projects E System Mar n	nager	
	Name: Location:	TwinCAT Projec	<u>Click her</u> t1 FwinCAT Projec	e to go online and	I find templates.	Browse			
	Solution name:	TwinCAT Projec	t1			Create direct	tory for soluti	ion	
l							OK	Cance	el

- 3. Single click "OK".
- 4. Add a device.

The module supports two device configuration modes: "automatic scan" and "manual addition".

- Automatic scan configuration
- 1. Single click "I/O > Devices", and right click "Scan" to scan slave station devices.

Server Explorer	Solution Explor	rer D ~ Twind AT Pr TEM TION	Image: Coccuration       Image: C	به به المعار عر	×
		Devic	AS	_	
	<b>*</b>		Add New Item	Ins	
		•	Add Existing Item	Shift+Alt+A	
			Export EAP Config File		
		×	Scan		
			Paste	Ctrl+V	
			Paste with Links		

2. Check "Local Connection" network card.

1 new I/O devices found	×
②Device 2 (EtherCAT) [以太网 (Realtek PCIe GbE Family Controller)]	OK Cancel
	Select All Unselect All

- 3. Single click "OK".
- 4. In the pop-up "Scan for boxes" box, select "Yes", as shown below. Microsoft Visual Studio  $\qquad \times$

? Scan for b	oxes
是(Y)	否(N)

5. In the pop-up "Activate Free Run" box, select "Yes", as shown below. Microsoft Visual Studio  $\qquad \times$ 



Example: The scanned "Box 1(XB6-EC0002)" is a coupler.

View modules connected to Box1. There are currently four modules connected to it, as shown below.

olution Explorer	₹ ₽ × Twin	CAT Project2	76 🌣 🗙 📕						
0 · 1 · -	Ge	neral EtherC	AT Process	Data Slots	Startup	CoE - C	nline O	nline	
earch Solution Explorer (Ctrl+;)	ρ-								
Solution 'TwinCAT Project276' (1 project)  Solution TwinCAT Project276  MOTION  PC SAFETY		Init Pre-Op Op	e Bo Sat	otstrap fe-Op ear Error	Cu	rrent Sta quested	ite: State:	OP	
▲ 🛃 I/O		DLL Status							
<ul> <li>Devices</li> <li>Device 2 (EtherCAT)</li> </ul>		Port A:	Carrier / O	pen					
tmage		Port B:	No Carrier	/ Closed					
Image-Info		Port C:	No Carrier	/ Closed					
<ul> <li>Inputs</li> <li>Outputs</li> </ul>		Port D:	No Carrier	/ Closed					
👂 🔚 InfoData	Nam	e	Online	Type	Size	>Ad	In/	Us L	inked to
A D Box 1 (XB6-EC0002)	🕶 Co	uplerState	0	UINT	2.0	39.0	Input	0	
Inputs	🗾 🕶 Cł	annel 1	0	BIT	0.1	41.0	Input	0	
Module 1 (YR6-3200R)	🕶 Cł	annel 2	0	BIT	0.1	41.1	Input	0	
<ul> <li>Module 2 (XB6-1616B)</li> </ul>	🗧 🔁 Cł	annel 3	0	BIT	0.1	41.2	Input	0	
<ul> <li>Module 2 (XB6-A80I)</li> </ul>	🔹 Cł	annel 4	0	BIT	0.1	41.3	Input	0	
Module 4 (XB6-A08I)	🔹 Cł	annel 5	0	BIT	0.1	41.4	Input	0	
WcState	🔹 Cł	annel 6	0	BIT	0.1	41.5	Input	0	
🕨 🛄 InfoData	* Cł	annel 7	0	BIT	0.1	41.6	Input	0	
📸 Mappings	Ct	annel 8	0	BIT	0.1	41.7	Input	0	
	• 0	annel 9	U	BIT	0.1	42.0	Input	0	
		annei 10 annel 11	0	BIT	0.1	42.1	Input	0	
	- Ci	List	~	511	0.1	1216	mpar	~	
olution Explorer Class View	Error	List							
	Y	1 Error	1 0 Ma	minge 1	Morrag	o Cla	37		_

#### Add a device manually •

Single click "I/O > Devices", and right click "Add New Item". The following window will pop 1. up.

Insert Device	×
Type: EtherCAT	Ok Cancel Cancel O PC only O CX only O BX only O All
Name: Device I	

- 2. Select "EtherCAT > EtherCAT Master", and single click "OK".
- 3. Select "Ethernet" in the pop-up window.
- 4. Single click "I/O > Devices", and right click "Add New Item". The following window will pop up.

### Select a coupler. Insert EtherCAT Device Search: Name: Box 2 <u>Type</u>: Ð



5. Add a device.

	👻 🖣 🗙 🛛 Twin	CAT Project23 👳	×							
© © ⋒   ™ - ₪   ₽	p -	eneral EtherCAT	Process Data	Slots	Startup	CoE - Onli	ne Online			
arach Solution Explorer (CHr) 3 Solution Turical Project2 (1 project) ■ Solution Turical Project2 ■ Strikin Turical Project2 ■ Strikin Turical Project2 ■ Cr + ■ Cr +	- 4	Slot 20 Terminals 20 Termina			×	Module  Digital I  Digital I  SBC  XBC  XBC  XBC  XBC  XBC  XBC  XBC	nput Term 32008 16008 3200A 1600A 08008 000A 000A 00168(W) 0032A 0032A 0032A 0032A 0032A 0032A 0032A	inals	Module 1 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000 0x0000	
Public (Mase-Cuolog)     Public (Mase-Cuolog)     Public (Mase-Cuolog)     Public (Mase-Cuolog)     Public (Mase-Cuolog)     Westate     Public (Mase-Cuolog)     Mappings	Nar 22 C 22 N 22 II 22 I	ne couplerState VcState nputToggle tate udsAddr r List - 😢 0 Errors	Online	0	Type UINT BIT BIT UINT AMSADDI	Size 2.0 0.1 0.1 2.0 R 8.0	>Add 39.0 1522.1 1524.1 1548.0 1550.0 Search 1	In/Out Input Input Input Input	User 0 0 0 0 0	, ,

In "Slots" tab, add a device.

# 4. Data interaction

Digital input:

Taking **XB6-3200B** module as an example, the input signal can be monitored in "Inputs" of the module, as shown below:

Solution Explorer	<b>→</b> # ×	TwinCAT Project9 👳	× Com	mand Window					
○ ○ ☆ 'o - @ ≠ <u>-</u>		Name	Online	Туре	Size	>Add	In/Out	User	Linked to
Search Solution Explorer (Ctrl+;)	. م	🔁 Channel 1	1	BIT	0.1	41.0	Input	0	
Solution 'TwinCAT Project9' (1 project)		🐔 Channel 2	1	BIT	0.1	41.1	Input	0	
TwinCAT Project9		🔁 Channel 3	1	BIT	0.1	41.2	Input	0	
SYSTEM		🔁 Channel 4	1	BIT	0.1	41.3	Input	0	
A MOTION		📌 Channel 5	1	BIT	0.1	41.4	Input	0	
III PLC		🐔 Channel 6	1	BIT	0.1	41.5	Input	0	
SAFETY		📌 Channel 7	1	BIT	0.1	41.6	Input	0	
86- C++		🕶 Channel 8	1	BIT	0.1	41.7	Input	0	
▲ 🔄 I/O		🕫 Channel 9	1	BIT	0.1	42.0	Input	0	
▲ "lig Devices		🔁 Channel 10	1	BIT	0.1	42.1	Input	0	
Device 2 (EtherCAT)		🔁 Channel 11	1	BIT	0.1	42.2	Input	0	
image ↓ Image		😕 Channel 12	1	BIT	0.1	42.3	Input	0	
image-into		🕫 Channel 13	1	BIT	0.1	42.4	Input	0	
		🔁 Channel 14	1	BIT	0.1	42.5	Input	0	
Outputs		🔁 Channel 15	1	BIT	0.1	42.6	Input	0	
🕨 🛄 InfoData		😕 Channel 16	1	BIT	0.1	42.7	Input	0	
<ul> <li>Box 1 (XB6-EC0002)</li> </ul>		🔁 Channel 17	0	BIT	0.1	43.0	Input	0	
Inputs		Channel 18	0	BIT	0.1	43.1	Input	0	
Outputs		2 Channel 19	0	BIT	0.1	43.2	Input	0	
<ul> <li>Module 1 (XB6-3200B)</li> </ul>		2 Channel 20	0	BIT	0.1	43.3	Input	0	
Inputs		Channel 21	0	BIT	0.1	43.4	Input	0	
<ul> <li>Module 2 (XB6-0032B)</li> </ul>		Channel 22	0	BIT	0.1	43.5	Input	0	
P U Outputs		Channel 23	0	BIT	0.1	43.6	Input	0	
Module 3 (XB6-0032B)		Channel 24	ő	BIT	0.1	43.7	Input	ő	
<ul> <li>Module 4 (X86-00328)</li> <li>Module 5 (X86-00328)</li> </ul>		Channel 25	0	BIT	0.1	44.0	Input	0	
Woldlie 5 (805 00525)		Channel 26	0	BIT	0.1	44.1	Input	0	
InfoData		Channel 27	0	BIT	0.1	44.2	Input	0	
Appings		Channel 28	0	BIT	0.1	44.2	Input	0	
		Channel 20	ő	BIT	0.1	44.4	Input	ŏ	
		Channel 20	ő	BIT	0.1	44.5	Input	0	
		Channel 30	0	DIT	0.1	44.6	Input	0	
		Channel 31	0	DIT	0.1	44.7	Input	0	
		- Channel 32	U	BII	0.1	44.7	input	U	

Digital output:

Taking **XB6-0032B** as an example, in order to enable output of channel **17** of the module, the following operation steps are required:

- Select "TwinCAT Project > I/O > Box 1(XB6-EC002) > Module 2(XB6-3200B) > Outputs > Channel 17".
- 2. Switch to "Online".
- 3. Single click "Write" to set "Dec" as "1".



4. Single click "OK", and the channel indicator corresponding to the module will light up.

# 7.4.2 Application in Sysmac Studio software environment

# 1. Preparation

# Hardware environment

A computer installed with Sysmac Studio software

Omron PLC: NX1P2 9024DT

Dedicated EtherCAT shielded cable

A switching power supply

Module installation guide rail and fasteners

The module model and type are show in the table below:

Туре	Model	Quantity
coupler	XB6-EC2002ST	1
IO module	XB6-3200A	1
	XB6-0032A	4
	XB60032B	1
	XB6-A40V	1
End cover	XB6-CVR00	1

# **Device configuration files**

Website of configuration files: https://www.solidotech.com/documents/configfile

# Hardware configuration and wiring

Please operate according to 5 Installation and Disassembly and 6 Wiring.

# **Computer IP requirement**

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

# 2. Add a device description file

- 1. Log into Sysmac Studio.
- 2. Single click "Create a New Project" button.

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- <b>4</b> 连接到设备(€)	类型	标准工程		<b>•</b>
许可(1)				
	1 选择设备	đ		
	→	控制器		
试用版	设备	NX1P2	▼ - 9024DT	
· 剩余大数 19	版本	1.13		
				创建(C)

In the drop-down list of "Device" and "Version", select "Device", "Model", and "Version".

- 3. Select "Controller > Communication Configuration".
  - 1. Select a method for connecting the controller online, and enter a "remote IP address", as shown below.

☑ 通信设置	– 🗆 ×
▼ 连接拳型	
· 之与之人工 请洗择——个在线时每次与控制器连接时使用的方法	
● Ethernet-直接连接	_
● USB-远程连接	
Ethernet-Hubizig	
● 每次任货连接时,请从以下选项甲选择。	
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USB-远程连接	유
☑ Ethernet-Hub连接	
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192.168.2501	
USB通信测试 Ethernet通信测试	
	_
任与控制器的通信甲设宜喇应监视时间。(1-3600秒) 当通讨多个网络伽VPN连接)连接到控制器时, 违设置足够大的值。	
2 (秒)	
御守 取送	

2. Single click "Ethernet Communication Test", and the system will show a successful test message.

# 3. Add an XML file

- 1. Unfold "Configuration and Setting" in the left navigation tree, and double click "EtherCAT".
- 2. Right click "Main Device", and select "Display ESI Library", as shown below.

多视图浏览器 🚽 🖡	EtherCAT 🗙
	节点地址(网络设置
new_Controller_0	王设备
▼ 配置和设置	
EtherCAT	发
▶ 🖻 CPU/扩展机架	70.20(ビ)
↓ 1/0 映射	副床(D)
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	显示已温测(K)
	·····································
	与出配置信息(E)
	输出ENS文件
	导出所有耦合器//0分配

3. In the pop-up "ESI Library" window, single click "Install (File)" button, and select a XML file path.

# 4. Add a device

# Add a coupler

- 1. Unfold "Configuration and Setting" in the left navigation tree, and double click "EtherCAT" to show "Node Setting | Network Setting" page.
- 2. In the drop-down list of "All Suppliers" in the right navigation bar, select "Nanjing Solidot Electronic Technology Co., Ltd", as shown below.



3. Double click **XB6-EC0002** to add a coupler module, as shown below.



### • Add an I/O module

Single device connection:

1. Select the added coupler module, and right click it to show the menu. Select "Edit Module Setting", as shown below.



2. Place the cursor on "Module", and single click the module in the right list. Add I/O modules one by one according to I/O configuration sequence.

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◎ 初月 20 10 10 10 10 10 10 10 10 10 10 10 10 10	課 EtherCAT节点1:XB6-EC0002 (E001) ×	↓ 工具箱 ↓ 卩
キリ認知法語     ・0     new_Controller_0     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・     ・	Bit Hot AT         The I: Mode - Ecolog (2001)         Mill Exit:           (1) E I: Mode - Ecolog (Mode)         (2) A         (2) A           (1) E I: Mode - Ecolog (Mode)         (2) A         (2) A           (1) I: Ferminals         (2) A         (2) A           (2) I: Ferminals         (2) A         (2) A           (2) I: Ferminals         (2) A         (2) A           (3) I: Ferminals         (2) A         (2) A           (4) I: Ferminals         (2) A         (2) A           (5) I: Ferminals         (2) A         (2) A           (6) I: Ferminals         (2) A         (2) A           (3) I: Terminals         (2) A         (2) A	Tells and characterized and the second
<ul> <li>● 任务设置</li> <li>● 数据跟踪设置</li> <li>▼ 備程</li> <li>▼ 値 POUs</li> <li>▼ 圖 程序</li> <li>▼ 圖 Pongan0</li> </ul>	D terminats 2番名称 1 Terminats 2番名称 15 Terminats 5 17 Terminats 7 17 Terminats 7 18 Terminats 7 18 Terminats 7 19 Terminats 7 19 Terminats 7 10 Termi	22 Classical Digital Input/UK     22 Classical Digital Input/UK     22 X66-6800A
<ul> <li>La Section</li> <li>La Section</li> <li>La Subit</li> <li>La</li></ul>	編編 <mark>≹001</mark>	

Multi-device cascading:

- 1. Selected the added coupler module, and right click it to show the menu. Select "Edit Module Setting".
- 2. Single click the top menu bar "Controller > Online".
- 3. Right click the "Main Device" icon, and select "Write Slave Device Node Address", as shown below. Enter a "Setting" different from the "Current Value".



- 4. Restart PLC and the device simultaneously.
- 5. Right click "Main Device" icon, and select "Compare with Physical Network Configuration and Merge".

# 5. Configuration download

Single click "Controller > In Transmission > Transmit to Controller" to send the online data to the controller.

# 6. Channel test

In the left navigation tree, double click "I/O Mapping", and select a corresponding I/O module to view and operate channel data.

多视图浏览器 🗸 🗸	EtherCAT	-口 节点1 : XB6-EC0002 (E001)	🥔 I/O 映射 🗴	<		-
	位置	端口		说明	R/W	数据类型
new_Controller_0		▼ StherCAT网络配置				
▼ 配置和设置	节点1	🔻 🎽 XB6-EC0002				
▼ 跚 EtherCAT		Outputs_CouplerCtrl_F200_	01		w	UINT
▼ □ 节点1:XB6-EC0002		Inputs_CouplerState_F100_(	01		R	UINT
L -□ 0 · XB6-3200B(M	插槽0	▼ XB6-3200B				
		Inputs_Channel 1_6000_0	01		R	BOOL
		Inputs_Channel 2_6000_0	02		R	BOOL
▶ 国 CPU/扩展机梁		Inputs_Channel 3_6000_0	03		R	BOOL
■ //○ 映射		Inputs_Channel 4_6000_0	04		R	BOOL
▶ ● ● ● ● ● ● ● ●		Inputs_Channel 5_6000_0	05		R	BOOL
▶ ۞ 运动控制设置		Inputs_Channel 6_6000_0	06		R	BOOL
🖌 Cam数据设置		Inputs_Channel 7_6000_0	07		R	BOOL
▶ 事件设置		Inputs_Channel 8_6000_0	08		R	BOOL
■ 任务设置		Inputs_Channel 9_6000_0	09		R	BOOL
网数据跟踪设置		Inputs_Channel 10_6000	_0A		R	BOOL
		Inputs_Channel 11_6000	_OB		R	BOOL
		Inputs_Channel 12_6000	_0C		R	BOOL
	一监视类型 —	▲ 2进制 ▲ 16进制 ▲ 右効早10	曲曲 三竹旦			
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▶ ■ 数据			1922/34			
▶ 由 任务						

# 7. Module parameter configuration

# Output emptying/holding function

- 1. Double click "I/O Mapping" in the left navigation tree to show "I/O Mapping" window.
- 2. Unfold the node. In the system operation state, Write "01" into "Outputs_CouplerCtrl_F200_01" to complete configuration of clearing/holding function.

ETH EtherCAT	🚽 🖓 I/O 映射 🗙 ┛ 节点2 : XB6-EC0002 (E00	)2) -口 节点1 : XB6-EC00	02 (EOC	)1)		-
位置	端口	说明	R/W	数据类型	值	变量
	▼ SetherCAT网络配置					^
节点1	🔻 🎽 XB6-EC0002					
	Outputs_CouplerCtrl_F200_01		W	UINT	0	
	Inputs_CouplerState_F100_01		R	UINT	0	
插槽0	XB6-0032B					
插槽1	🕨 ХВ6-0032В					
插槽2	► XB6-0032B					
插槽3	► XB6-0032B					
插槽4	► XB6-0032B					
插槽5	► XB6-0032B					
插槽6	XB6-0032B					
插槽7	XR6_0032R					
				(A)	5 🚖	
● 数据类型	● 2进制 ● 16进制 ● 有符号10进制 ● 无				MSB	-LSB 🔵 LSB-MSB

0: clear the output

1: hold the output

# Analog range selection and filtering configuration

- 1. Double click a node in the left navigation tree and select a corresponding input module.
- 2. After the system goes offline, single click "Edit Initialization Parameter Setting" button.

ECAT Et	herCAT	- 〇 节点1	: XB6-EC0002 (E001) 🗙				•
16	置	插槽	模块	1	^		
节	点1 : XI	B6-EC0002 (EC	001)		Ι,		
	0	Terminals	70XB6-3200A (M1)			坝目名称	<u>(ii</u>
		Terminals	70XB6-0032A (M2)			设备名称	M4
	2	Terminals	70XB6-0032B (M3)			型号 주민수산	XB6-A40V
	3	Terminals	70XB6-A40V (M4)			广南省称	4 Channel Analog Input, Vo
	4	Terminals				建酸过量	o 0v6001:01 lpputs/Chappel 1
	5	Terminals					0x6001:02 Inputs/Channel 2
	6	Terminals				PDO映射设置	0x6001:03 Inputs/Channel 3
	7	Terminals					0x6001:04 Inputs/Channel 4
	8	Terminals					编辑PDO映射设置
	9	Terminals				河ムルム米の雪	设置
i i	10	Terminals			ш	切知りの参加改員	编辑初始化参数设置
i	11	Terminals				备份参数设置	
i	12	Terminals					
1	13	Terminals					
	14	Terminals					
1	15	Terminals					
	16	Terminals					
1	17	Terminals					
1	18	Terminals					
1	19	Terminals					
2	20	Terminals					
2	21	Terminals					
2	22	Terminals					
4	23	Terminals					
4	24	Terminals					
	25	Terminals				初始化参数设置	
	26	Terminals				该从设备不支持参数设置功能	
2	27	Terminals				NOT COLOR DE	
2	28	Ierminals					
4	29	Terminals					
3	80	Terminals					

# 3. Range selection and filtering configuration

It is possible to select a range and set filtering parameters in "Edit Initialization Parameter Setting" page. For specific parameters, please refer to <u>7.3 Module parameter configuration</u> <u>function</u>.



### 7.4.3 Application in CODESYS V3.5 software environment

### 1. Preparation

# Hardware environment

A computer installed with CODESYS V3.5 software

Dedicated EtherCAT shielded cable

A switching power supply

Module installation guide rail and fasteners

The module model and type are shown in the table below:

Туре	Model	Quantity
coupler	XB6-EC0002	1
IO module	XB6-3200A	1
	XB6-0032A	4
	XB60032B	1
	XB6-A40V	1
End cover	XB6-CVR00	1

#### **Device configuration files**

Website of configuration files: https://www.solidotech.com/documents/configfile

### Hardware configuration and wiring

Please operate according to 5 Installation and Disassembly and 6 Wiring.

# 2. Install device configuration file

- 1. Install EhterCAT XML device description file ("EcatTerminal-XB6_VX.XX_ENUM.xml")
  - 1. Log into CODESYS.
  - 2. Select "Tools > Device Repository".
  - 3. Single click "Install", and select relevant XML file for installation.

After successful installation, "Device xxxx installed to device repository" will be displayed.

 $\times$ 

🜋 Device Repository

Location: System Repository (C:\ProgramData\CODESYS\Devices)	~	Edit Locations
Installed de <u>vi</u> ce descriptions:		
Name	^	<u>I</u> nstall
8 Channel Digital Input,PNP     8 Channel Digital Quitout NIPN		<u>U</u> ninstall
- 1 8 Channel Digital Output, NPN		
Valve Terminal(max 16)		Install DT <u>M</u>
XB6-EC0002(Modules/Slots and MDP)	~	
<	>	
C:\Users\dell\Desktop\everything\EcatTerminal-XB6_V1.15_ENUM.xml     Device "32 Channel Dinital Input DND" installed to device repository	^	
Device "16 Channel Digital Input, PNP" installed to device repository.		Details
Device "8 Channel Digital Input, PNP" installed to device repository.		Deterrorm
Device "32 Channel Digital Input,NPN" installed to device repository.	~	
<	>	
		Close

### 2. Add EtherCAT Master

- 1. Double click "Device(CODESYS Control Win V3 X84)" in the left navigation tree, and single click "Scan Network".
- 2. Select a device for network scan, e.g.:



3. Select "Device(CODESYS Control Win V3 X84)" in the left navigation tree, and right click to select "Add Device", as shown below.

Devices	- 4 X 📊	Device X
Untitled4	Con	nmunication Settings Sca
	Cut	ations
🖹 🔘 Applica 🗎	Сору	
👘 Libra 🛍	Paste	up and Restore
PLC 🗙	Delete	
🖻 👹 Tasi 🕞	Properties	4
- <b>*</b>	Add Object	
	Add Folder	ettinas
	Add Device	
	Update Device	shell
Dĩ	Edit Object	s and Groups
	Edit Object With	
	Edit IO mapping	deployment
	Import mappings from CSV	IS
	Export mappings to CSV	
*	Online Config Mode	mation
	Reset origin device [Device]	
	Simulation	
	Device Configuration	

4. Select "EtherCAT Master", as shown below.

ame: EtherCAT_Master			
Action:			
Append device O Insert device O Plug device	e O <u>U</u> pdate devie	ce	
Device:			
/endor: <all vendors=""></all>			~
Namo	Vandar		~
	venuor		
Fieldbusses			
HCAN CANbus			
Brog EtherCAT			
Brow Master			
EtherCAT Master	3S - Smart Software	e Solutions GmbH	
EtherCAT Master SoftMotion	3S - Smart Software	e Solutions GmbH	
🗈 🕮 Ethernet Adapter			
🗉 👄 EtherNet/IP			
🗈 📖 Modbus			v
<		>	
Group by category			
Display all versions (for experts only)			
Display outdated versions			
nformation:			
Name: EtherCAT Master	^		
Vendor: 3S - Smart Software Solutions GmbH			
Categories: Master			
Version: 3.5.8.0			
Order Number:	~		
ppend selected device as last child of evice			_
You can select another target node in the navi	igator while this wir	idow is open.)	
	Add Davies	Class	
	Add Device	close	•

- 5. Single click "Add Device", and press Enter in the Device List box to activate the device.
- 3. Configure "EtherCAT Master".
  - 1. Double click "EtherCAT Master(EtherCAT_Master)".
  - 2. Single click "Browse", and select "Ethernet" in the pop-up box, e.g.:

🚹 Device 🥂 👬	EtherCAT_Master X	]	
General		Autoconfig Master/	/Slaves EtherCAT
Sync Unit Assignment	Ether	AT NIC Setting	
EtherCAT I/O Mapping	Des	tination Address (N	MAC) FF-FF-FF-FF-FF
Status	Sou	rce Address (MAC) vork Name	00-00-00-00-00 Browse
Information	Select Network Ada	pter	
	MAC address 509A4C3B4514 509A4C3B4514 1252161768D9 2252161768D9 8052161768D9	Name 以太冈 2 以太冈 2:1 本地连接* 1 本地连接* 3 WLAN 2	Description Realtek PCIe GBE Family Controller #2 Realtek PCIe GBE Family Controller #2 Microsoft Wi-Fi Direct Virtual Adapter Microsoft Wi-Fi Direct Virtual Adapter #3 Qualcomm QCA9565 802.11b/g/n Wireless Adapter
			OK Abort

4. Configure a device

The module supports two device configuration modes: "automatic scan" and "manual addition".

• Automatic device scan

Devices		<b>-</b> 4 X	/ 🕤 D	evice 👔 EtherC	AT_Ma	aster X
Dutiled4     Device (CODESYS C     Device (CODES)     Device (	Untitled4 Untit		Genera Sync U EtherC Status Inform	I nit Assignment AT I/O Mapping ation		✓ Autoconfig Master/Slaves          EtherCAT NIC Setting         Destination Address (MAC)         Source Address (MAC)         50-9A-4C-3B-45-14         Browse         Network Name         以太河 2
	PLC	_PRG				✓ Distributed Clock
LitherCAT_Mas	× 10 10 10 10 10 10 10 10 10 10	Cut Copy Paste Delete Refactoring Properties Add Object Add Folder Add Device Insert Device	Þ	er) (		Cycle Time 4000 🔅 µs Sync Offset 20 😵 % ☐ Sync Window Monitoring Sync Window 1 ♀ µs
	ſ	Scan For Devices Disable Device Update Device Edit Object Edit Object With Edit 10 mapping Import mappings from 0 Export mappings to CS Simulation Device Configuration	CSV V			

1. Select "EtherCAT_Master (EtherCAT Master)", and single click "Scan For Devices", as shown below.

2. Select "XB6_EC0002", and single click "Copy All Devices to Project", as shown below.

Devicename	Devicetype	Alias Address		
- XB6_EC0002	XB6-EC0002(Modules/Slots and MDP)	1		
XB6_3200A	Digital Input Terminals			
XB6_0032A	Digital Output Terminals			
XB6_3200B	Digital Input Terminals			
XB6_ASOV	Analog Input Terminals			

The device has been added, as shown below.

Devices 🝷 👎 🗙	Device EtherCAT_Master X
Untitled4  Device (CODESYS Control Win V3)	General 🖉 Autoc
PLC Logic	Sync Unit Assignment EtherCAT N
Library Manager	EtherCAT I/O Mapping Destinati
PLC_PRG (PRG)	Status Source A
⊜ 🕸 MainTask —⊕ EtherCAT_Master.EtherCAT	Information <ul> <li>Select</li> </ul>
	▲ Distribut
EtherCAT_Master (EtherCAT Master)     XB6_EC0002 (XB6-EC0002(Modules/Slot     XB6_3200A (Digital Input Terminals)     XB6_0032A (Digital Output Terminals)     XB6_3200B (Digital Input Terminals)     XB6_A80V (Analog Input Terminals)	Cycle Time Sync Offse Sync W Sync Wind

- Single click "Online > Multiple", and select "Always Execute Full Download". 1.
- Single click "Online > Login" in the menu bar. 2.

# Add a device manually

Add the modules one by one in their installation order. In the case of wrong order, the system will not run normally.

- Select "EtherCAT_Master (EtherCAT Master)". 1.
- 2. Right click "Add Device" to show "Add Device" page. Select a coupler, as shown below.

1 Ad	dd Device	2
Name	:: XB6_EC0002	
Actio	2012	
• <u>A</u>	ppend device O Insert device O Plug device O Update device	
Devi	re-	
Vend	dor: <all vendors=""></all>	~
- Nie		•
	A Sieldhusses	
	Burget EtherCAT	
	Butter States	
	XB6-FC0002(Modules/Slots and MDP)	
	Accelnet EtherCAT Drive (CoE) SoftMotion	-
	Affinity in RFC mode SoftMotion	
	Affinity SoftMotion	
	🚮 AKD EtherCAT Drive (CoE) SoftMotion	
<		>
	Group by category	
	Display all versions (for experts only)	
	Display outdated versions	
1-6-		
Infor	Margary VEC EC0002(Madulas (Slate and MDO)	
Ξ.	Vendor: Nanjing Solidot Electronic Technology Co.,	
	Ltd	
	Categories: Slave	
	Version: Revision=16#00000001	
Арре	end selected device as last child of	
Ethe	erCAT_Master	
0	(You can select another target node in the navigator while this window is open.)	
	Add Device Clo	se

Select a coupler and single click "Add Device" to add an I/O module, as shown below. 3.

levices	_	<b>~</b> ₽ X	Device	Name: XE	6_3200A		
Divited4		•	Course .	Action:			
B B Device (CODESYS	Control Win	r ∀3)	General	Appen	d device 🔿 Insert device 🔿 Plug device 🛛	<ul> <li>Update device</li> </ul>	
PLC Logic			Sync Unit Assignm	Device:			
= () Applicat	ion		PharCAT NO Man	Vendor:	<al vendors=""></al>		
	PPG (PPG)		EtherCAT I/O Map;	News		Mandan	
E Task	Configuratio		Status	Name		vendor	
= @ N	lainTask		Information		12 Channel Relay Output	Nanjing Solidot Electronic T	ech
đ	EtherCA	[_Master.EtherCA]	Information		16 Channel Digital Input,NPN	Nanjing Solidot Electronic T	ed
đ	PLC_PRO				16 Channel Digital Input,PNP	Nanjing Solidot Electronic T	ed
EtherCAT_Ma	ster (Ether	CAT Master)			16 Channel Digital Output,NPN	Nanjing Solidot Electronic T	ed
XB6_ECO	002 (NPC EC	Out			16 Channel Digital Output, PNP	Nanjing Solidot Electronic T	ed
	(RD)	Coox			32 Channel Digital Input, NPN	Nanjing Solidot Electronic T	ea
	8	Paste			32 Channel Digital Input, PNP	Nanjing Solidot Electronic I	eo
	×	Delete			22 Channel Digital Output, NPN	Nanjing Solidot Electronic I	ea
	•	Pafactoring			Sz channer bigitar output,prop	Nanjing Soldot Electronic I	ea
	-	Description			la sete se		-
	902	Properces		Group	by category		
	늰	Add Object		Displa	iy all versions (for experts only)		
		Add Folder		Displa	ey outdated versions		
		Add Device		Informatio	in:		
		Disable Device		🕤 Na	me: 32 Channel Digital Input,NPN	^	
		Lindate Device		Ve	ndor: Nanjing Solidot Electronic Technology Co.	,	
	15	Edit Object		Lto	1 • • • • • • • • • • • •	<b>*</b>	
	<b>U</b>	Edit Object With		Ca Ve	regories: Module		
		Edit 10 manoina				× 🛁	
		Europhing	am CSV	Append s	elected device as last child of		_
		Export mappings to	CSV	XB6_EC0	002		
		Smulation		\varTheta (You	can select another target node in the navigat	or while this window is open	n.)
		Smulauon					

- 5. Test an IO module
  - Configure IO module bus mode
    - 1. Single click "Logout" button to exit from PLC.
    - 2. Double click a coupler to switch to "EhterCAT I/O Mapping" tab.
    - 3. In the "Always update variables" drop-down list in the bottom right corner, select "Enabled1" mode, as shown below.

Owner         Owner <th< th=""><th>Nices</th><th> × / H Device   H Ether</th><th>CAT_Master / Amaster Cooos</th><th>×</th><th></th><th></th><th></th><th></th><th></th></th<>	Nices	× / H Device   H Ether	CAT_Master / Amaster Cooos	×					
Control         Userability         Marging         Channel         Address         Type         Description           Image: Control on operation of the control on operation operation operation of the control on operation operation op	3 Untiled?	•	( diamate						
Image: State       Parties Parties State       Parties State       Parties	B Device (CODESYS Control Win V3)	General	Mariable	Manuface Channel				Provide later	
Order         Operation         Op	+ DI PLC Logic	Process Data	Variable	Mapping Channel	Add	ress lyp	pe Unit	Description	
Image: Start Namp       Im	🖹 🔘 Application			CouperChi		KGNO UBN	r	coupercen	
• (m) (m)         • (m)	- 🎁 Library Manager	Startup Parameters		X86_0032A	Uname 1 9	KQK2.0 BLI		196_0032A Channel 1	
• • • • • • • • • • • • • • • • • • •	R.C., PRG (PRG)			X86_0032A	Channel 2 5	AGK2.1 BET		386_0032A Channel 2	
Bar         ************************************	= 🧱 Task Configuration	EtherCAT I/O Mapping		X86_0032A 0	Channel 3 9	KQN2.2 BET		x86_0032A Channel 3	
If the City Dues (Book City Dues)       If the	🖹 🥵 MainTask	Status.		X86_0032A 0	Channel 4 9	AGK2.3 BET		x86_0032A Channel 4	
Image: Section	- d] EtherCAT_Master.EtherCAT_Task			X86_0032A 0	Channel 5 5	AQN2.4 BET		386_0032A Channel 5	
***         The CLY June (Fact Thunk)         ***         Head Thunk (Fact Thunk)         ***         Head Thunk)         Head Thunk)         ***         Head Thunk)         <	- @] PLC_PRG	Information		X86_0032A 0	Channel 6 9	KQK2.5 BET		186_0032A Channel 6	
**       Bit (State) Genet (State) (St	EtherCAT_Master (EtherCAT Master)			X86_0032A 0	Channel 7 5	AGK2.6 BET		386_0032A Channel 7	
Image: Section 20 and Section 20 an	386_EC0002 (H86-EC0002(Hookules;(Slots and MDP))			X86_0032A 0	Channel 8 5	KQK2.7 BET		186_0032A Channel 8	
9         Big (SD 20 weil 2) (Big	186_3200A (32 Channel Digital Input, NPN)			X86_0032A 0	Channel 9 9	AGK3.0 BET		386_0032A Channel 9	
Image: Bit and Developed Deve	- 🛐 186_0332A (32 Channel Digital Output, VPN)			X86_0032A 0	Channel 10 5	2QK3.1 BET		386_0032A Channel 10	
With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145) Control 1           Y         With (145) Control 1         With (145) Control 1         With (145) Control 1         With (145	105_00328 (32 Channel Digital Output,PHP)			X86_0032A	Channel 11 9	KGK3-S BEL		386_0032A Channel 11	
9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Volt IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Bill (SSID) Over IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Bill (SSID) Over IS         Bill (SSID) Over IS           9         Bill (SSID) Over IS         Bill (SSID) Over IS	386_A40/ (+ Channel Analog Input, Voltage)		- 7	X86_0032A (	Channel 12 9	KQK3.3 BET		x86_0032A Channel 12	
9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 10         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 21         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 21         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         V(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         U(2), 31         Bill (1)310 Orwit 3           9         Bill (1)310 Orwit 3         U(2), 31         Bill (1)3				X86_0032A	Channel 13 5	kQK3.4 BET		386_0032A Channel 13	
*         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3           *         Md, USL Ower 3         Vol. 10         Md, USL Ower 3				X86_0032A (	Channel 14 5	KQK3.5 BET		x86_0032A Channel 14	
9         Bit (S150 Over 3)         Vert 3)         Bit (S150 Over 3)			- 7	X86_0032A 0	Channel 15 9	VQX3.6 BET		x86_0032A Channel 15	
9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Vert 10         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Solid (133) Over 13         Bill (133) Over 13           9         Bill (133) Over 13         Bill (				X86_0032A	Channel 16 5	kQK3.7 BET		355_0032A Channel 15	
9         80,0130 Overd 3         90,0131 Overd 3         80,0130 Overd 3         80,010 Overd 3 <t< td=""><td></td><td></td><td></td><td>X86_0032A (</td><td>Channel 17 9</td><td>KQK4.0 BET</td><td></td><td>x86_0032A Channel 17</td><td></td></t<>				X86_0032A (	Channel 17 9	KQK4.0 BET		x86_0032A Channel 17	
9         86(5):500-6001         9         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9         86(5):500-601         9 </td <td></td> <td></td> <td></td> <td>X86_0032A 0</td> <td>Channel 18 9</td> <td>AGR4.1 BET</td> <td></td> <td>x86_0032A Channel 18</td> <td></td>				X86_0032A 0	Channel 18 9	AGR4.1 BET		x86_0032A Channel 18	
9         Bill, 2013.0 Over 3         Sol, 41         Bill         Bill, 2013.0 Over 3           9         Bill, 2013.0 Over 31         Sol, 41         Bill         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41         Bill, 2013.0 Over 31         Bill, 2013.0 Over 31           9         Bill, 2013.0 Over 31         Sol, 41				X86_0032A 0	Channel 19 5	KQK4.2 BET		386_0032A Channel 19	
9         86,0150 Owned 3         90,0150 Owned 10           9         86,0150 Owned 3         90,0150 Owned 3           9         86,0150 Owned 3         90,014         87         86,0150 Owned 3           9         86,0150 Owned 3         90,014         87         86,0150 Owned 3           9         86,0150 Owned 3         90,014         87         86,0150 Owned 3           9         86,0150 Owned 3         90,014         87         86,0150 Owned 3           9         86,0150 Owned 3         90,014         87         86,0100 Owned 3           9         86,0150 Owned 3         90,014         87         86,0100 Owned 3           9         86,0150 Owned 3         90,014         87				X86_0032A 0	Channel 20 9	KQK4.3 BET		x86_0032A Channel 20	
9         88,0333         Over 31         90,043         80         90,0335         Over 31           9         88,0333         Over 31         90,043         87         90,0335         Over 31           9         88,0335         Over 31         90,043         87         90,0335         Over 31           9         88,0335         Over 31         90,013         87         88,0330         Over 31           9         88,0335         Over 31         90,013         87         88,0330         Over 31           9         88,0335         Over 31         90,013         87         88,0330         Over 31           9         88,0335         Over 31         90,013         87         88,0330         Over 31           9         88,0335         Over 31         90,013         87         88,0330         Over 31           9         88,0335         Over 31         90,017         87         88,030         Over 31           9         88,0335         Over 31         90,017         89,030         89,030         Over 31           9         88,0335         Over 31         90,017         89,030         89,030         Over 31         90,017         89,0300 <td></td> <td></td> <td></td> <td>X86_0032A 0</td> <td>Dhannel 21 5</td> <td>ACK4.4 BET</td> <td></td> <td>386_0032A Channel 21</td> <td></td>				X86_0032A 0	Dhannel 21 5	ACK4.4 BET		386_0032A Channel 21	
9         Bill, 2013 Ower 31         Volume 13         Volume 14         <				X86_0032A 0	Channel 22 5	KQK4.5 BET		186_0032A Channel 22	
9         86, 5120 Own 3         90, 51         107         80, 520 Own 3           9         86, 5120 Own 3         90, 107         107         80, 500 Own 3           9         86, 5120 Own 3         90, 112         107         80, 500 Own 37           9         86, 5120 Own 3         90, 31         107         80, 500 Own 37           9         86, 5120 Own 3         90, 31         107         80, 500 Own 37           9         86, 5120 Own 3         90, 31         107         80, 500 Own 37           9         86, 5120 Own 38         90, 31         107         80, 500 Own 37           9         86, 5120 Own 38         90, 31         107         80, 500 Own 38           9         86, 5120 Own 38         90, 33         107         80, 500 Own 38           9         86, 5120 Own 38         90, 33         107         80, 500 Own 38           9         86, 5120 Own 38         90, 33         107         80, 500 Own 38         100, 500 Own 38           9         80, 5120 Own 38         90, 37         107         80, 500 Own 38         108, 500 Own 38           9         80, 500 Own 38         90, 37         107         80, 500 Own 38         100, 500 Own 38           9				X86_0032A 0	Channel 23 %	ACK4.6 BET		386_0032A Channel 23	
*         386, 1031 Owner 33         406, 2031 Owner 33         406, 2031 Owner 33           *         386, 1031 Owner 33         407         107         408, 2031 Owner 33           *         386, 1031 Owner 33         407         107         808, 2031 Owner 33           *         386, 1031 Owner 33         407         107         808, 2031 Owner 33           *         386, 1031 Owner 33         400, 103         107         808, 2031 Owner 33           *         386, 1031 Owner 33         400, 103         107         808, 2033 Owner 31           *         386, 1031 Owner 31         400, 13         107         80, 2033 Owner 31           *         386, 1033 Owner 31         400, 13         107         80, 2033 Owner 31           *         386, 1033 Owner 31         400, 13         107         80, 2033 Owner 31           *         386, 1033 Owner 31         400, 13         107         80, 2033 Owner 31           *         386, 1033 Owner 31         400, 13         107         80, 2033 Owner 31           *         386, 1030 Owner 31         400, 13         400, 13         400, 2033 Owner 31           *         386, 1030 Owner 31         400, 13         400, 13         400, 13           *         386,				X86_0032A	Channel 24 5	ACR4.7 BET		386_00324 Channel 24	
*         384,0130.00md 31         Volt 1         07         88,0130.00md 37           *         384,0130.00md 31         Volt 3         07         88,0130.00md 31           *         384,0130.00md 31         070.00md 31         070.00md 31         070.00md 31           *         384,0130.00md 31         070.01         070.00md 31         070.00md 31         070.00md 31           *         384,0130.00md 31         070.01         107         88,0230.00md 31         070.01         070.00md 31           *         384,0130.00md 31         070.01         107         88,0230.00md 31         070.01         0.010.00md 31         070.00         0.010.00md 31         070.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010.00         0.010				X86_0032A	Channel 25 5	AGK3.0 BET		386_0032A Channel 25	
**         386, (131) Order 17         440, 513         617         481, 5130         Order 17           *         386, (131) Order 13         107         481, 510         Order 17           *         386, (131) Order 13         107         481, 510         Order 17           *         386, (131) Order 13         107         481, 510         Order 17           *         386, (131) Order 13         107         48, 510         Order 17           *         386, (131) Order 13         107         48, 510         Order 17           *         386, (131) Order 13         40, 511         586, 500         586           *         386, (131) Order 13         40, 511         586, 500         587         588, 500           *         386, (131) Order 13         40, 511         586, 500         587         588, 500         588, 500           *         386, (131) Order 13         40, 511         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500         588, 500				X86_0032A	Channel 26 5	ACRS.1 BET		386_00324 Channel 26	
**         384_01010 Owner 33         1021         68_01010 Owner 33         1021         68_01010 Owner 33         1021         68_01010 Owner 33         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021         1021				X86_0032A	Channel 27 5	KQKS.2 BET		386_0032A Channel 27	
*         Statig				X86_0032A (	Channel 28 %	IQKS.3 BET		x86_0032A Channel 28	
**         108, (1012) Owner (3)         107, (312) Owner (3)         108, (312) Owner (3)				X86_0032A 0	Channel 29 9	KQNS.4 BET		x86_0032A Channel 29	
*9         Reg.(#10):0 Generit 1         %0,0,2.3         Eff         NULL (SUD):0 Generit 1           WEI_REDIX.Generit 3         Reg.(#10):0 Generit 3         %0,0,2.3         Eff         NULL (SUD):0 Generit 3           WEI_REDIX.Generit 31         Reg.(#10):0 Generit 3         Reg.(#10):0 Generit 3         Nummer generit 4:0 Generit 3         Nummer generit 4:0 Generit 3           Eff.(NULL (SUD): SUD): SUD (SUD): SUD (SU				X86_0032A	Channel 30 5	KQK3.5 BET		x86_c032A Charvel 30	
**         (mid_citilationwerd) 3         %45(5)         fett         (mid_citilationwerd) 4           ##         (mid_citilationwerd) 4         Rest Mapping         (mid_citilationwerd) 4         (mid_citilationwerd) 4           ##         (mid_citilationwerd) 4         Rest Mapping         (mid_citilationwerd) 4         (mid_citilationwerd) 4           ##         (mid_citilationwerd) 4         (mid_citilationwerd) 4         (mid_citilationwerd) 4         (mid_citilationwerd) 4				X86_0032A (	unannel 31 9	KQR3.6 BLT		xee_cousta channel 31	
1865_0732A Channel 31 Restar Mapping Always update wintables: Soulded 1 Law back give law fine tau IRC Options IRC Options				X86_0032A	Channel 32 5	KQKS.7 BET		386_0032A Charvel 32	
BC Coloreta Una control de la			X86_0032A Channel 31		Reset Mapping Always update variables			Enabled 1 (use bus cycle task if no	t used in any ta
Enabled 2 follows in the curle track			IEC Objects					Use parent device setting Enabled 1 fuse bus cude task if no	t used in any ta
Vanable Mapping Type			Variable	Mapping Type				Enabled 2 (always in bus cycle task	4)
- @ 186,50002 **@ ETCSave			- @ XB6_EC0002	* ETCSlave					

- 4. Execute download and single click "Online Multiple".
- 5. Test input and output.
  - 1. Single click "Log Into" button to log in again.
  - 2. Double click the coupler, and click "Prepared Value" cell.
  - 3. In the top menu bar, click "Debug > Write Value".

eneral	Channels									_
	Variable	Mapping	Channel	Address	Туре	Current Value	Prepared Value	Unit	Description	
ocess Data			CouplerCtrl	%QW0	UINT	0			CouplerCtrl	
artun Paramatere	***		XB6_0032A Channel 1	%QX2.0	BIT	FALSE	TRUE		XB6_0032A Channel 1	
artap r arametera	- **		XB6_0032A Channel 2	%QX2.1	BIT	FALSE	TRUE		X86_0032A Channel 2	
nerCAT I/O Mapping	**		XB6_0032A Channel 3	%QX2.2	BIT	FALSE	TRUE		XB6_0032A Channel 3	
	- <b>*</b> *		XB6_0032A Channel 4	%QX2.3	BIT	FALSE	TRUE		X86_0032A Channel 4	
atus	**		XB6_0032A Channel 5	%QX2.4	BIT	FALSE	TRUE		XB6_0032A Channel 5	
formation	- **		XB6_0032A Channel 6	%QX2.5	BIT	FALSE	TRUE		XB6_0032A Channel 6	
	<b>*</b> *		XB6_0032A Channel 7	%QX2.6	BIT	FALSE	TRUE		X86_0032A Channel 7	
	- **		XB6_0032A Channel 8	%QX2.7	BIT	FALSE	TRUE		XB6_0032A Channel 8	
			XB6_0032A Channel 9	%QX3.0	BIT	FALSE			XB6_0032A Channel 9	
	**		XB6_0032A Channel 10	%QX3.1	BIT	FALSE			XB6_0032A Channel 10	
	- **		XB6_0032A Channel 11	%QX3.2	BIT	FALSE			XB6_0032A Channel 11	
	<b>*</b> ø		XB6_0032A Channel 12	%QX3.3	BIT	FALSE			X86_0032A Channel 12	
	**		XB6_0032A Channel 13	%QX3.4	BIT	FALSE			XB6_0032A Channel 13	
	<b>*</b> ø		XB6_0032A Channel 14	%QX3.5	BIT	FALSE			X86_0032A Channel 14	
	<b>*</b> ø		XB6_0032A Channel 15	%QX3.6	BIT	FALSE			X86_0032A Channel 15	
	**		XB6_0032A Channel 16	%QX3.7	BIT	FALSE			XB6_0032A Channel 16	
	<b>*</b> ø		XB6_0032A Channel 17	%QX4.0	BIT	FALSE			XB6_0032A Channel 17	
	<b>*</b> @		XB6_0032A Channel 18	%OX4.1	BIT	FALSE			X86_0032A Channel 18	
	CouplerState				Reset Maj	pping Always update v	ariables: Enabled 1	(use bus	cycle task if not used in any f	task)
	IEC Objects									
	Variable	Mapping	Туре							
	··· @ XB6 EC0002	×.	ETCSlave							

# 6. Module parameter configuration

# **Output clearing/holding configuration**

 In the left navigation bar, double click coupler XB6-EC0002. In its "Property" tab, select "EtherCAT I/O Mapping" page.

General	Channels						
	Variable	Mapping	Channel	Address	Туре	Unit	Description
Process Data			CouplerCtrl	%QW0	UINT		CouplerCtrl
Startup Parameters	**		XB6_0032A Channel 1	%QX2.0	BIT		XB6_0032A Channel 1
Startup Parameters	🍫		XB6_0032A Channel 2	%QX2.1	BIT		XB6_0032A Channel 2
EtherCAT I/O Mapping	<b>*</b> ø		XB6_0032A Channel 3	%QX2.2	BIT		XB6_0032A Channel 3
	**		XB6_0032A Channel 4	%QX2.3	BIT		XB6_0032A Channel 4
Status	🍫		XB6_0032A Channel 5	%QX2.4	BIT		XB6_0032A Channel 5
Information	**		XB6_0032A Channel 6	%QX2.5	BIT		XB6_0032A Channel 6
	**		XB6_0032A Channel 7	%QX2.6	BIT		XB6_0032A Channel 7
	- <b>*</b>		XB6_0032A Channel 8	%QX2.7	BIT		XB6_0032A Channel 8
			XB6_0032A Channel 9	%QX3.0	BIT		XB6_0032A Channel 9
	<b>*</b> *		XB6_0032A Channel 10	%QX3.1	BIT		XB6_0032A Channel 10
	**		XB6_0032A Channel 11	%QX3.2	BIT		XB6_0032A Channel 11
	<b>*</b> *		XB6_0032A Channel 12	%QX3.3	BIT		XB6_0032A Channel 12
	<b>*</b> ø		XB6_0032A Channel 13	%QX3.4	BIT		XB6_0032A Channel 13
	<b>*</b>		XB6_0032A Channel 14	%QX3.5	BIT		XB6_0032A Channel 14
	<b>*</b> ø		XB6_0032A Channel 15	%QX3.6	BIT		XB6_0032A Channel 15
	- **		XB6_0032A Channel 16	%QX3.7	BIT		XB6_0032A Channel 16
	<b>*</b> *		XB6_0032A Channel 17	%QX4.0	BIT		XB6_0032A Channel 17

- 2. In the system operation state, enter "Preset Value", click "Debug > Write Value", and modify the value of "CouperCtrl".
  - **0**: clear the output
  - 1: hold the output

# Analog range and filtering configuration

1. Enable expert configuration

Log out. In the left navigation bar, double click coupler **XB6-EC0002**, and select "Startup Parameters" page in its "Property" tab.



2. Single click "Add" button to show "Select Item from Object Directory" page.

Select Item from Object Directory

Index:Subindex	Name	Flags	Туре	Default		
= 16#2000:16#00	XB6-3200A Config	RW	USINT			
:16#01	Channel Debounce Time	RW	UDINT	16#000		
· 16#2030:16#00	XB6-A40V Config	RW	USINT			
I6#F030:16#00	Configured Module Ident List	t RW	USINT			
Name	Channel Debource Time					
Name	channel Debounce nine					
Index: 16#	2000 🖨 Bitl	ength: 32		÷	L	ОК
SubIndex: 16#	1 Valu	ue: 3ms			~	Cancel
Complete Acce	ess 🔲 Byte Array					

It is possible to set the range and filtering parameters in "Select Item from Object Directory"

### page.

Select Item from Object Directory

Index:Subindex	Name	Flags	Туре	Default
16#2000:16#00	XB6-3200A Config	RW	USINT	
16#2030:16#00	XB6-A40V Config	RW	USINT	
:16#01	Channel1 Range Setting	RW	UDINT	16#000
:16#02	Channel2 Range Setting	RW	UDINT	16#000
:16#03	Channel3 Range Setting	RW	UDINT	16#000
:16#04	Channel4 Range Setting	RW	UDINT	16#000
:16#05	Channel 1 Filter Time	RW	UDINT	16#000
:16#06	Channel2 Filter Time	RW	UDINT	16#000
:16#07	Channel3 Filter Time	RW	UDINT	16#000
:16#08	Channel4 Filter Time	RW	UDINT	16#000
6 16#F030:16#00	Configured Module Ident List	RW	USINT	
Name	Channel & Danne Cablian			
Name	Channel4 Range Setting			
Index: 16#	2030 🖨 Bitlen	gth: 32	th: 32	
SubIndex: 16#	4 ♦ Value: -10~+10V(0~65535)			535) ~
Complete Acce	ss 🔄 Byte Array			