

PROFINET XB6 Series Slice I/O User Manual



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1 Product Overview

1.1 Product Introduction

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 to provide high real-time performance and connects a variety of modules. It helps users collect high-speed data, optimize system configuration, simplify field wiring, and improve system reliability.

1.2 Product Feature

• Fewer nodes required

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

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

Flexible configuration

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

High compatibility

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

• Small footprint

Compact structure and small footprint.

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.

High speed

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

Easy installation

Installation on standard DIN 35 mm rails.

Spring terminal blocks are used for convenient and fast wiring.

1.3 Application Configuration



Application method:

Different modules can be combined, including power supply, coupler, digital, analog, relay, temperature, 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 rules:

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

2 Designation Rules

2.1 Designation Rules

2.1.1 Coupler Designation Rules

$\frac{XB}{(1)}\frac{6}{(2)} - \frac{PN}{(3)}\frac{20}{(4)}\frac{02}{(5)}\frac{ST}{(6)}$

ltem	Value	Description of the values		
(1)	Bus type	XB: X-bus backplane bus		
(2)	Product line	6: Slice I/O		
(3)		PN: PROFINET		
		MT: Modbus TCP		
		CL: CC-Link		
Bus protocol		EI: EtherNet/IP		
		EC: EtherCAT		
		CB: CC-Link IE Field Basic		
		CT: CC Link IE TSN		
(4)	Power supply	20: 2A		
(5)	Number of Bus Interfaces	02: 2*RJ45		
(6) Module type		ST: Kit of power supply, coupler, and cover plate		

2.1.2 I/O Modules Designation Rules

$\frac{XB}{(1)} \frac{6}{(2)} - \frac{A}{(3)} \frac{8}{(4)} \frac{0}{(5)} \frac{V}{(6)}$

Item	Value	Description of the values				
(1)	Bus type	XB: X-bus				
(2)	Product line	6: Slice I/O				
(2)		A: Analog				
(3)	i/O module type	Blank:	Digital			
(4)	Number of inputs	Analog	g: 0、4、8			
(-)		Digital	: 0、8、16、	32		
(5)	Number of outputs	Analog: 0、4、8				
(3)		Digital: 0、8、16、32				
			Digital			Analog
		Code	Input	Output	Code	Description
		А	NPN	NPN、0.25 A	V	-10~+10 V、0~+10 V
(6)		В	PNP	PNP、0.5 A	I	4~20 mA、0~20 mA
(0)		BW	PNP	PNP、0.25A	VW	-10~+10 V、0~+10 V
		Ν	NPN/PNP	-	IW	4~20 mA、0~20 mA
		AN	-	NPN、0.25A	TM	Resistance Temperature Detector
		BN	-	PNP、0.5A		(RTD), thermocouple (TC)

2.2 List of common modules

Model	Product description			
XB6-MT2002ST	Modbus TCP coupler kit (power supply + coupler + cover plate)			
XB6-P2000	Extension power module			
XB6-3200A	32-channel digital input module, NPN type			
XB6-3200B	32-channel digital input module, PNP type			
XB6-0032A	32-channel digital output module, NPN type			
XB6-0032B/XB6-0032BW	32-channel digital output module, PNP type			
XB6-1600A	16-channel digital input module, NPN type			
XB6-1600B	16-channel digital input module, PNP type			
XB6-0016A	16-channel digital output module, NPN type			
XB6-0016B/XB6-0016BW	16-channel digital output module, PNP type			
XB6-0800A	8-channel digital input module, NPN type			
XB6-0800B	8-channel digital input module, PNP type			
XB6-0008A	8-channel digital output module, NPN type			
XB6-0008B/XB6-0008BW	8-channel digital output module, PNP type			
XB6-1616A	16-channel digital I/O module, NPN type			
XB6-1616B/XB6-1616BW	16-channel digital I/O module, 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-A80V	8-channel analog voltage input module			
XB6-A40V	4-channel analog voltage input module	Optional ranges:		
XB6-A08V	8-channel analog voltage output module 0~+10 V -10~+10 V			
XB6-A04V	4-channel analog voltage output module			
XB6-A80I	8-channel analog current input module			
XB6-A40I	4-channel analog current input module	Optional ranges:		
XB6-A08I	8-channel analog current output module	0~20 mA 、4~20 mA		
XB6-A04I	4-channel analog current output module			
XB6-A80VW	8-channel analog voltage input module			
XB6-A40VW	4-channel analog voltage input module	Optional ranges:		
XB6-A08VW	8-channel analog voltage output module	0~+10 V -10~+10 V		
XB6-A04VW	4-channel analog voltage output module			
XB6-A80IW 8-channel analog current input module				
XB6-A40IW	4-channel analog current input module Optional ranges:			
XB6-A08IW	8-channel analog current output module 0~20 mA 、4~20 mA			
XB6-A04IW	4-channel analog current output module			
XB6-0012J	12-channel relay 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					
	Power module	106X61X22.5 mm			
Size	Coupler module	106X61X22.5 mm			
	I/O module	106X73X25.7 mm			
	Power module	110 g			
Weight	Coupler module	80 g			
	I/O module	90 g			
Working temperature	-10~+60°C				
Storage temperature	-20℃~+75℃				
Relative humidity	95%, non-condensing				
Protection degree	IP20				

3.2 Power parameters

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

3.3 Interface parameters

PROFINET interface parameters			
Bus protocol	PROFINET		
Number of I/O stations	Based on the PLC		
Data transmission medium	Ethernet CAT5 cable		
Transmission distance	≤100 m (distance between stations)		
Transmission rate	100 Mbps		
Bus interface	2xRJ45		

3.4 Digital parameters

Digital input				
Nominal voltage	24 VDC (±25%)			
Number of inputs	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 filter	3 ms			
Input current	4 mA			
Isolation method	Optically-coupled isolation			
Electrical isolation	500 V			
Channel indicator	Green LED			
Digital output				
Nominal voltage	24 VDC (±25%)			
Number of outputs	8、16、32			
Signal type	NPN/ PNP			
Load type	resistive load, inductive load			
Single-channel rated current	NPN Type Max: 250 mA			
	PNP Type Max:500 mA			
	BW Type Max: 250mA			
Port protection	Overvoltage and overcurrent protection			
Isolation method	Optically-coupled isolation			
Electrical isolation	500 V			
Channel indicator	Green LED			

Relay output			
Nominal voltage	24 VDC (±25%)		
Number of outputs	12		
Isolation method	Optocoupler, relay isolation		
Rated load	5 A		
Channel indicator	Green LED		

3.5 Analog parameters

3.5.1 Technical parameter

Analog input					
Number of inputs	4、8				
Input signal (voltage type)	0~+10 V、-10 V~+10) V(adjustab	le range)		
Input signal (current type)	0~20 mA、4~20 mA	adjustable r	ange)		
Resolution	16 bits				
	XB6-A40V、XB6-A80	0V	≤1 ksps		
	XB6-A40VW、XB6-A	480VW	≤62.5 sps	≤62.5 sps	
Sampling rate	XB6-A40I、XB6-A80	1	≤1 ksps		
	XB6-A40IW		≤100 sps		
	XB6-A80IW		≤62.5 sps		
	XB6-A40V、XB6-A80	0V	±0.1%		
Accuracy	XB6-A40VW、XB6-A	480VW	±0.3%	±0.3%	
Accuracy	XB6-A40I、XB6-A80	1	±0.1%		
	XB6-A40IW、XB6-A80IW		±0.3%		
Internal resistance (voltage type)	≥2 kΩ	≥2 kΩ			
Internal resistance (current type)	100 Ω				
Electrical isolation	500 V				
Channel indicator	绿色 LED 灯				
Temperature input					
Number of channels	4、8				
Sensor type	Thermocouple	Thermal re	esistor	Resistor	
Connection type	2 wire method	2 / 3 wire	method	2 wire method	
	K: -200~1370℃	Pt100: −200~850°C		15Ω~3kΩ	
	J: -200~1200℃	Pt200: -2	200~600 ℃		
	E: -200~1000℃	Pt500: -2	2 00~600 ℃		
	S: -50~1690℃	Pt1000: -	-200~600 ℃		
	B: 50~1800℃				
Accuracy	±0.5% ±1℃			±0.1%	
Sensitivity	0.1℃ ±0.1Ω			±0.1Ω	
Resolution	16 bits (int type)				
Channel indicator	Green LED				

Analog output				
Number of outputs	4、8			
Output signal (voltage type)	0~+10 V、-10~+10 V(adjustable	range)		
Output signal (current type)	0~20 mA、4~20 mA(adjustable r	ange)		
Resolution	16 bits			
	XB6-A04V、XB6-A08V	±0.1%		
Accuracy	XB6-A04VW、XB6-A08VW	±0.3%		
Accuracy	XB6-A04I、XB6-A08I	±0.1%		
	XB6-A04IW、XB6-A08IW	±0.3%		
Load impedance (voltage type)	≥2 kΩ			
Load impedance (current type)	≤200 Ω			
Electrical isolation	500 V			
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_(55206/20)*11	D=(27648/10)*U	
formula	D=(03555/20) 0	$D = (32707710)^{-1}0$	D=(33290/20) 0		
Voltage output	LL_(D*20)/65525				
formula	U=(D 20)/05555	U=(D 10)/32707	U=(D 20)/35296	U=(D 10)/27646	
Code value table	See Table 3-1 Voltage code values				

Note: D: code value; U: voltage

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
	D= (65535/20) *U	D= (32767/10) *U	D= (55296/20) *U	D= (27648/10) *U
	U= (D*20) /65535	U= (D*10) /32767	U= (D*20) /55296	U= (D*10) /27648

Table 3-1 Voltage code values

3.5.3 Current I/O range selection and code value table

Analog current I/O range selection and code value range					
Range selection	0	1	2	3	
Range	4~20 mA	0~20 mA	4~20 mA	0~20 mA	
Code value range	0~65535 0~27648				
Current input formula	D=65535/16*I-	D_(65525/20)*I	D=(27648/16)*I-	D (27640/20)*I	
	16384	D=(00000/20) 1	6912	D=(27040/20) 1	
Current output	I=(D+16384)*16/6	L (D*20)/65525	I=((D+6912)*16)/276	L (D*20)/27649	
formula	5535	I=(D 20)/05555	48	I=(D 20)/27040	
Code value table	See Table 3-2				

Note: D: Code value; I: current

Table 3-2 Current code values

Range selection	0 (default)	1	2	3
Range	4-20mA	0-20mA	4-20mA	0-20mA
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			29376	29030
22			31104	30413
22.81			32511	31538
22.96				31743
23	65535	65535		31795
23.52			32767	32511
23.70				
24				32767
25				
	D=65535/16*I-		D= (27648/16) *I-	
	16384	D= (65535/20) *I	6912	D= (27648/20) *I

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 m.

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

4.1.1 Coupler Structure

Name and function description of product components



4.1.2 Indicator function

Des	Description of IDs and indicators of the power module				
ID	Description	Color	Status	Status description	
Ρ	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 indicator	Red	OFF	No overload	
			ON	90% overload	
			Flashing	80% overload. The power supply to real stage load is cut off	

Description of IDs and indicators of the coupler module					
Name	ID	Color	Status	Status description	
Power indicator	D	Groop	ON	Normal status of power supply	
Fower indicator	Г	Gleen	OFF	Unpowered or abnormal power supply	
			ON	The I/O module is connected, X-bus system is interacted	
	L	Green	Electrica 147	The I/O module is connected, X-bus system is ready to	
System indicator				interact	
			Flashing 5Hz	The I/O module is not connected, X-bus system	
				configuration abnormal	
			OFF	The I/O module is not connected or abnormal connection	
Worping indiactor	D	Red	OFF	PROFINET bus parameters are set normally	
warning indicator	Б		Flashing	PROFINET bus parameters are not set or abnormal	
Network status	п	Croop	ON	The system is operating normally	
indicator	ĸ	Green	OFF	The system is operating abnormally	

Network port status indicator				
ID	Color	Status	Status description	
	Green	ON	Network connection established	
INI		OFF	Absent or abnormal network connection	
Yellow	Flashing	Connection established with data interaction		
		OFF	Absent or abnormal network connection	
	Green	ON	Network connection established	
		OFF	Absent or abnormal network connection	
001	Yellow	Flashing	Connection established with data interaction	
		OFF	Absent or abnormal network connection	

4.2 I/O modules panel

Name and function description of modules



I/O module Indicator description					
ID	Color	Status	Status description		
D	Croon	ON	Normal status of working power supply		
F	Green	OFF	Unpowered or abnormal power supply		
R C		ON	Normal system operation		
	Green	Flashing 1 Hz	I/O module connected, X-bus system ready for interaction		
		OFF	Unpowered, no X-bus data interaction, or abnormal status		
Innut channel		ON	Presence of signal input in module detection channel		
indicator	Green	OFF	Absence of signal input in module channel or abnormal signal		
Indicator		OFF	input		
		ON	Presence of signal output in module channel		
indication	Green		Absence of signal output in module channel or abnormal signal		
Indication		UFF	output		

5 Installation and Disassembly

5.1 Installation instructions

Installation and disassembly precautions

- Ensure that the cabinet is well ventilated. (such as the addition of exhaust fans to cabinets)
- 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.





Make sure the modules are installed vertically



Make sure to install guide rail fasteners



5.2 Installation and disassembly steps

Module installation and disassembly				
	1.	Install the power module on the fixed guide rail first.		
	2.	Install the coupler and the required I/O modules on the right side of the		
		power module.		
Module installation steps	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.		
	1.	Loosen the rail fasteners at both ends of the module.		
Module disassembly steps	2.	Pry loose the module snap fitting with a slotted screwdriver.		
	3.	Pull out the removed module.		

5.3 Installation schematic diagrams

Power module installation



Steps

Align the power module guide rail slot vertically with the guide rail, as shown in the figure ①



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

Coupler module installation



Steps

Align the left slot of the coupler module with the right side of the power module, and push it in as shown in the figure (3). Press the module with force into the guide rail until a "click" sound is heard. The module is now installed in placed.

I/O module installation









Steps

Install the required IO modules one by one using the same the steps as coupler module installation, as shown in the figure 45

Steps

Install the end cover on the right side of the last module, as shown in the figure[®], using the same installation method as the coupler module.

5 Installation and Disassembly

Installation of guide rail fasteners





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, as shown in the figure®

Disassembly



Steps

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, as shown in the figure (9)

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Steps

Install a guide rail fastener next to the left side of the coupler, and lock it tightly, as shown in the figure?





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), as shown in the figure (11) Note: Each module has two snap fittings, one on the top and the other at the bottom. Both should be operated in this way



Remove the module in the reverse order of installation, as shown in the figure⁽¹²⁾.

5.4 Dimension





Coupler module dimensions (Unit: mm)



Extension power module dimensions (Unit: mm)



I/O module dimensions (Unit: mm)



End cover module dimensions (Unit: mm)





6 Wiring

6.1 Wiring terminal

Wiring terminal		
Signal wire terminal	Number of poles	16 P
	Number of poles	20 P
	Wire gauge	22~17 AWG 0.3~1.0 mm ²
Power terminal	Number of poles	3P
	Wire gauge	22~16 AWG 0.3~1.5 mm 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.

Wiring tool required As the terminals are based on a screw-free design, cable installation and removal can be realized with a slotted screwdriver (size: ≤ 3 mm). 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 compatible cold-pressed terminal (tubular insulated terminal, as shown in the table below). Press the button whiling inserting the wire.

Terminal specifications are shown in the following table:

Specification of tubular insulated terminal		
Specification	Model	Cable section area (mm ²)
	E0310	0.3
	E0510	0.5
	E7510	0.75
	E1010	1.0
Length of tubular insulated terminal L ≥10 mm	E1510	1.5

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)

• Figure 6-1: Wiring diagram of coupler, IO modules, and power module in sequence





• Figure 6-2: Wiring diagram of coupler, IO modules, power module, IO modules, and power module in sequence



Figure 6-1

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>6.4 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

The standard RJ45 network interface with a standard crystal connector is used, and the pin assignment is shown in the figure below.



Pin	Signal
1	TD+
2	TD-
3	RD+
4	_
5	_
6	RD-
7	—
8	_

Precautions

• 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 XB6-PN0002 communication interface wiring

Some of the XB6-PN0002 coupler network ports silk-screened ID are and identified as IN/OUT, as shown in the figure below.

When wiring, you need to connect the network topology according to the corresponding scenario example, otherwise communication failure may occur.



6.3.1 Scenario 1: Only one XB6-PN0002 module in the network

When there is only one group of XB6-PN0002 modules in the network :

- "IN" port is connected to any network port of the previous node device;
- "OUT" port is connected to any network port of the latter node device, as shown in the figure below.

When connecting to devices of other manufacturers, the network topology specification of the corresponding manufacturer should be followed.



6.3.2 Scenario 2: Multiple XB6-PN0002 modules in the network

When there are multiple XB6-PN0002 modules in the network:

- The first module's "IN" port is connected to any network port of the previous node device;
- The last module's "OUT" port is connected to any network port of the latter node device;
- The connection between modules must follow the principle of "IN" to "OUT", as shown in the figure below.

When connecting to devices of other manufacturers, the network topology specification of the corresponding manufacturer should be followed.



6.3.3 Scenario 3: Using a switch in a network

When a switch is used in the network:

- The "IN" port of the module is connected to any network port of the switch;
- The connection between the modules must follow the "IN" to "OUT" principle, as shown in the figure below.

When connecting to devices of other manufacturers, the network topology specification of the corresponding manufacturer should be followed



6.4 I/O module wiring diagrams

XB6-3200N, XB6-0032AN, XB6-0032BN Wiring diagrams refer to the "XB6 Series_MIL Connector Type IO User Manual".

6.4.1 XB6-3200A



0V 24V

6.4.2 XB6-3200B









Module Panel



DI 0 1 2 3 4 5 6 7 P	0 0	B B C D B C B C B B C B B C B B C B B C B B C B C B B C B B C B B B C B
×	B6-1616A	4
DO		
0 1 2 3 3 4 5 5 7 6 7 7 7 7 7		8 9 A C C C C F F + -
_		
	, 	

Module Panel







6.4.5 XB6-1600A



6 Wiring

6.4.6 XB6-1600B



Module Panel





6.4.7 XB6-0800A



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6.4.8 XB6-0800B



Module Panel



DI ---5 Input 0 0 Input 2¹ 2 11 Input 3 12 | 13 I 14 ---Power 0 V +24 550A Power 0 V 0∨ 24

6.4.9 XB6-0032A



24V

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6.4.10 XB6-0032B

XB6-0032B





6.4.11 XB6-0016A





Module Panel





6.4.13 XB6-0008A



6.4.14 XB6-0008B



Module Panel



6.4.15 XB6-0012J

XB6-0012J





Module Panel



6.4.16 XB6-A80V/XB6-A80I

XB6-A80V/XB6-A80I





Module Panel

*Signal cable: shielded twisted pair cable is recommended

6.4.17 XB6-A40V/XB6-A40I





Module Panel



*Signal cable: shielded twisted pair cable is recommended

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

Note:

6.4.18 XB6-A08V/XB6-A08I

XB6-A08V/XB6-A08I



*Signal cable: shielded twisted pair cable is recommended

6.4.19 XB6-A04V/XB6-A04I

XB6-A04V/XB6-A04I



*Signal cable: shielded twisted pair cable is recommended





۱D

· 🛛

The screen printing of module XB6-A08I is XB6-A08I.

Module Panel

D+

0-



Note:

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

6.4.20 XB6-A80TM



6.4.21 XB6-A40TM

XB6-A40TM

Module Panel



6.5 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.

XX6-1616A	XX6-C18_2	
DI	сом сом	
Input 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Input 0 Input 1 Input 2 Input 2 Input 2 Input 2 Input 3 Input 4 Input 3 Input 4 Input 5 Input 4 Input 6 Input 4 Input 6 Input 6 Input 6 Input 6 Input 7 Input 7 Inp	5
Output 0 Output 8 Output 1 Output 8 Output 1 Output 9	COM COM	
Output 2 0 12 0 14 0		
Output 7 7 17 Output F Power +24 VI 8 18 Power +24 Power 0V 9 19 Power 0 L10	V 10 117 1 17 1	+24V 220V-
		0V 24V=

Wiring method of two-wire sensor (NPN type)

Wiring method of two-wire sensor (PNP type)

XX6-1616B	XX6-C18_2		
DI	СОМ	сом	
Input 0 0 0 Input 8 Input 1 0 0 Input 8 Input 2 0 0 Input 4 Input 3 0 11 Input 8 Input 4 0 12 Input 6 Input 5 0 13 Input C Input 6 6 14 Input E 7 0 15	Input 0,	Input 8 Input 9 Input A Input B Input C Input D Input E Input	
DO		nput F	
Output 0 Output 8 Output 8 Output 1 1 11 Output 9 0 0 12 Output 9 0 0 12 Output 9 0 0 13 Output 8 0utput 3 0 13 Output 8 0utput 4 0 14 Output 0 0 14 0 14 output 0 0 0 15 output 0 0 0 0 16 0 0 0	COM		
Output 7 0 10 0 10 0 10 0 1			+24V 220V~ 0V 24V =

Wiring method of three-wire sensor (NPN type)



Wiring method of three-wire sensor (PNP type)



7 Operation

7.1 Module application

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



Coupler

0.0.0

Second product combination (coupler, I/O modules, extension power module, I/O modules, end cover) extension power module

I/O modules

end cover

- Please refer to the following principles for the number of I/O modules to be configured:
- 1. The number of IO modules that can be supported by a coupler is not higher than 32.
- 2. The number of analog modules should not exceed 12, and the number of 8-channel analog inputs should not exceed 8.

7.2 Module parameters configuration function

I/O modules

7.2.1 Digital input filtering

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 default value of digital input filtering is currently fixed at 3ms and all clutters within 3ms can be filtered out. Separate channel configuration is not allowed. The 3ms input filtering time means that a single signal changing from 0 to 1 or from 1 to 0 can only be detected after 3ms has lapsed following such change, while a single high pulse or low pulse shorter than 3ms will not be detected

Configuration method

See 7.3 Bus module configuration description

* After the modification, it is recommended to repower the module

7.2.2 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)

Configuration method

See 7.3 Bus module configuration description

* After the modification, it is recommended to repower the module

7.2.3 Digital 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 method

See 7.3 Bus module configuration description

* After the modification, it is recommended to repower the module

7.2.4 Analog range selection

The analog range setting function is used to set the analog range (see 3.5 Analog Parameters for details).

Configuration method

See 7.3 Bus module configuration description

* After the modification, it is recommended to repower the module

7.3 Bus module configuration description

7.3.1 Application in TIA Portal V14 software environment

1. Preparations

Hardware environment

A computer installed with TIA Portal V14 software

A Siemens PLC

Dedicated PROFINET shielded cables

A switching power supply

Module installation guide rail and fasteners

Module model:

Туре	Model	Number
PLC	S7-1200	1
Coupler	XB6-PN2002ST	1
	XB6-3200B	1
	XB6-3200A	1
I/O Modules	XB6-1616B	1
	XB6-A80V	1
End cover	XB6-CVR00	1

Device configuration files

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

Hardware configuration and wiring

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

2. Project Creation

- 1. Open the TIA Portal V14 software.
- 2. Click "Create New Project"

	创建新项目	
▲ 打开现有项目	项目名称:	XB6-PN2000
	路径:	D:\workspace\Automation
🥚 创建新项目	版本:	V14 SP1 💌
● 移植项目	作者:	dell
	注释:	^
● 关闭项目		
		~
		创建

Project name: Customize, can keep the default.

Path: The project keeps the path, which can be kept as default. Version: Keep the default.

Author: You can keep the default.

Comment: Custom, can be left blank.

3. Adding a PLC

1. Click "Configure a device"

启动			新手上路
设备与网络	م ر ال	打开现有项目	项目:"项目7"已成功打开。请选择下一步:
PLC 编程	٠	 创建新项目 移植项目 	# [±]
运动控制 & 技术	*	● 关闭项目	
可视化		● 欢迎光临	設备和网络 安美 組态设备
在线与诊断	10	🥚 新手上路	PLC编程
		● 已安装的软件	→ 送动控制 · · · · · · · · · · · · · · · · · · ·
		● 帮助	→ 可視化 👔 組态 HM 画面
		历尸介面管言	→ >>> 项目祝園 打开项目祝園

2. click "Add new device", select the PLC model you are currently using, and click "Add", as shown in the below figure

h			添加新设备
设备与网络	A	 显示所有设备 添加新设备 	● 通行制器 ▲ 设备: ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
PLC 编程 运动控制 &	 (*) (*)		
技木 可视化	1		(中山1210 EDDCDE (订货号: 6557 211-18540 0/80 (可货号: 6557 211-18540 0/80 (可货号: 6557 211-18540 0/80 (可贷号: 1212 EDDCDE (可管号: 1212 EDDCD
在线与诊断	18	● 组态网络	
		● 帮助	 ● (1) 11 11 12 00 00 000 ● (1) 11 14 00 00 0000 ● (1) 11 14 00 00 0000 ● (1) 11 14 00 00 0000 ● (1) 11 15 00 00000 ● (1) 11 15 00 00000 ● (1) 11 15 00 000000 ● (1) 11 15 00 000000 ● (1) 11 15 00 0000000 ● (1) 11 15 00 0000000000000000000000000000
			☑ 打开设备视图 添加

Check to see that the PLC has been added to the device navigation tree.

4. Scan devices

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

▼ 🗋 项目7
📑 添加新设备
🚠 设备和网络
PLC_1 [CPU 1211C AC/DC/Rly]
🕨 🖳 未分组的设备
▶ 🙀 公共数据
▶ im 文档设置
▶ 100 语言和资源
▼ 🔚 在线访问
┃ 显示隐藏接口
🔻 🛄 Realtek PCIe GbE Family Controller 📷
品?更新可访问的设备
🕨 🛄 Intel(R) Wi-Fi 6 AX201 160MHz
🕨 🗋 Microsoft Wi-Fi Direct Virtual Adap 🐻
🕨 📔 Microsoft Wi-Fi Direct Virtual Adap 🐻
🕨 🗋 PC internal [本地]
USB [S7USB]
▶ 🛄 TeleService [自动协议识别] 🛛 💹
▶ 📴 读卡器/USB 存储器

After the update, the connected slave devices are displayed, such as the below figure.

设备					「豊拓	扑涧图	人國悠	和图 11	设备视图
					68 314	11.00.63	000 10011	Dues 1	ex en tutes
· (声 语言和逻辑)		·		ł	6槽 1地	り北 Q	地址	类型	-
▼ ■ 在线访问				1	03				^
┆ 显示隐藏接口				1	02				_
Realtek PCIe GbE Family Controller	N								~
月2 更新可访问的设备		K II 2 100% •							>
plc_1 [192.168.0.1]					9	属性	1 信息	🗓 诊断	
pnio [192.168.0.2]		常規 交叉引用 编译							
Intel(R) Wi-Fi 6 AX201 160MHz	100								
Microsoft Wi-Fi Direct Virtual Adapter	100	1 显示所有消息							
Microsoft Wi-Fi Direct Virtual Adapter <2>	100								
▶ 🛄 PC internal [本地]	100	1 消息	转至	?	日期	时间			
USB [S7USB]	100	✓ 已创建项目项目12。			2022/5/7	16:44:43	3		
▶ 🛄 TeleService [自动协议识别]	100	1 扫描接口 Realtek PCIe GbE Family Controller 上的设备已启动。			2022/5/7	17:05:01			
▶ 🤄 读卡器/USB 存储器	=	1 扫描接口 Realtek PCIe GbE Family Controller 上的设备已完成。在网络上找到了 2 个设			2022/5/7	17:05:09)		

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

5. Add a GSD configuration file

- 1. In the menu bar, click "Options > Manage general station description files (GSD)".
- 2. Click "Source path" to select the file.

Check whether the status of the GSD file to be added is "Not yet installed", if it is installed, click "Cancel" to skip the installation step.

6. Add a slave device and modify the device name and IP address

- 1. Double-click "Devices and networks" on the left navigation bar.
- 2. Click the "Hardware Directory" vertical button on the right side to display the following directory.

硬件目录		
选项		P
< 目录		Ē
	tini lini	*
☑ 过渡 翻置文件 <全部>	- 📑	9.
▶ 词 控制器		
🕨 🫅 HMI		10
▶ 🛅 PC 系统		H
▶ 🛅 驱动器和起动器		7
▶ 🛅 网络组件		
▶ 词 检测和监视		1
▶ 🛅 分布式 I/O		Ħ
▶ 🛅 供电与配电		*
▶ 🛅 現场设备		
▶ 词 其它現场设备		
		亮

- 3. Select "Other Field Devices > PROFINET IO > I/O > Sdot > X-Bus > XB6-PN0002".
- 4. Drag or double-click "XB6-PN0002" to the "Network View", as shown in the below figure.

项	目(12) 编辑(12) 被图(2) 插入(1)	在线(2) 违项(1) 工具(1) 窗口(2) 帮助(1)	Totally Integrated Automation	
	「 🔄 体任坝目 🚢 👗 🖽 🗔		PORTA	-
	项目树 🗆 📢	项目12 ▶ 设备和网络 _ 副 ■ ×	硬件目录 ■□▶	
	设备	🦉 拓扑視图 🔒 网络视图 📑 设备视图	洗项	100
	4 m m			唐
				- ≩
402	C. C. I.	*	▶ 目录	
宦	◆ □ 项目12 A		64 66	17-
ųг		PLC 1	→ 讨论 配表文件 全部> ■ 回動	1
観	THE DIC 1 (CRU1214	CPU 1214C		8
50°	N 2841		▼ 10 场份量	16
	0. ###init##		▶ mi AS 接口	Ē
	- 建筑中		Commanding and signaling devices	1
	・ 「「丁芝対象」		SIPLUS HCS	
	> 分部要文件		▼ 📜 其它现场设备	1
	▶ 🍃 PLC 变量		▶ 1 其它以太网设备	(FF)
	▶ 💽 PLC 数据类型		▼ Im PROFINETIO	124
	> >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		Drives	
	▶ 📴 在线备份	PNIO	Encoders	
	🕨 📴 Traces	X86-PN0002	Gateway	2
	▶ III 设备代理数据	未分離	▼ 10	
	2 程序信息		BOE	
	► PLC 报警文本	v	▼ Jan Sdot	
	 	K III > 100%	♥ La X+Bus	
	▶ 🔚 未分组的设备	21日代 11日の 見込新 コーマ	X86-PN0002	
	▶ 🔄 未分散的设备		ABSPN2000	
	・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・	洋城 父文51月 编译	Ident Systems	
		3 4 0 显示所有消息	Sensors	
			PROFIBUS DP	
	< 11 >	1 消息 検至 ?	×	4
) 详细视图	 ٤ 	> 信息	
Ē.	◆ Portal 视图 Ⅲ 总观	📥 设备和网络	📑 🔀 无法执行设定的命令。	

5. Click "Unassigned (blue font)" on the slave device and select "PLC_1.PROFINET interface_1", as shown in the figure below

PINIO	
XB6-PN0002	/Dot
主公売	
🕰 法择 10 捻集	
	100

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

┎ 网络 廿 连接	HMI 连接		■ 拓扑视图 ■ 田 □ ○	▲ 网络视图 えま	☐ 设备视	图	
PLC_1 CPU 1214C	PNIO X66-PH0002 FLC_1	e	/Dot	en e	ysten (100)		夏谷繁荣

6. Click on the device name and rename the device, as shown in the figure below.



7. Open "Device View" and change the IP address in "Properties", as shown in the following figure.

PNIO [XB6-PN0002]		◎属性 到信息 🔒 型诊断 🛛 🖃
常規 10 变量 系:	统常数 文本	
 常規 目录信息 	以太网地址	
▼ PROFINET接口 [X1] 常規	接口连接到	
 ▼ 高級送项 接口选项 		★联网 ▼ 添加新子网
介质冗余 等时同步模式	IP协议	
 > 买时设定 ▼ Port 1 - RJ45 [X1 P1 R] 営相 	IP 地址: 子网道码:	192.168.0.1 255.255.255.0
端口互连 端口选项		(使用谿由器
▶ Port 2 - RJ45 [X1 P2 R] 标识与维护	PROFINET	
模块感数 Shared Device		■ 自动生成 PROFINET 设备名称
	PROFINET设备名称: 转换的名称:	pnio pnio
	设备编号:	1

 Add I/O modules according to the actual topology in the "Modules" directory on the right (the order must be consistent with the actual topology, otherwise the communication will not be successful), as shown in the figure below.

					_ 7 =	× 硬件目录	D D >
	6	7 拓扑袖	见图 🔒	网络视	🛙 🚺 设备视图	选项	
设备概览							
₩ 模块	机架	插槽	1地址	Q 地址	类型		
▼ PNIO	0	0			XB6-PN0002	-	tini Lini
PN-IO	0	0 X1			PNIO	☑ 试验 國要文件 ◇◆部、	
XB6-32008_1	0	1	25		XB6-3200B		
XB6-3200A_1	0	2	69		XB6-3200A	Analog Input	
XB6-1616B(W)_1	0	3	1011	23	XB6-1616B(W)	Analog Output	
	0	4				Tim Digital I/O	
	0	5				X86-16164	
	0	6				V86-16168(M)	
	0	7				Till Digital Input	
	0	8				VR6-0800A	
	0	9				186-0800B	
	0	10				X86-1600A	
	0	11				TR6-1600B	
	0	12				X86-3200A	
	0	13				TR6-3200AN	
	0	14				X86-32008	
	0	15				186-3200BN	
	0	16				Digital Output	
	0	17				Belay Output	
	0	18					
	0	19				· • • • • • • • • • • • • • • • • • • •	

Up to 32 modules can be added, I/O address is assigned by the system, or you can change it by yourself

 Switch to "Network View", right-click on the connection line between PLC and PNIO, and select "Assign Device Name".



10. The "Assign PROFINET Device Name" window pops up, as shown in the following figure.

分配 PROFINET 设备名和	\$.						-
-		组态的 PROFINE	T设备				
		PROFINET	泰女歌:	pnio		-	
		10	高い100 各出型:	X86-PN0002			
		17 48 X- 13					
		11:15(1)円	05米州:	Phi/IE			
		PCI PCI		Desire Date of the	- To Controller		
		r di	C MICH .	No Realter Pole Got Par	may controller		
		设备过滤器					
		🖌 仮豊示同一	太型的设备				
		🗌 仅显示参数	设置错误的	夜音			
		□ 仅置示没有	名称的设备				
	10月8日日10月15月11 10月8日日110月15月11月	mm ·	10.96	anorury if the last	4.*		
	192.168.0.2	02:00:00:1E-84:00	校 面 PNIO	phio	(1)(2)		
□ 闷烁 LED							
	<						>
					更新列表	分配名称	
在线状态信息:							
 被索完成。扶到0 	个设备(共0个)	•					
A A A A A A A A A A A A A A A A A A A	① (算量(算2个))	•					
 搬索完成。找到1 							
 撤索完成。找到1 							-
 							>
 			•				>

Check whether the MAC address on the coupler silkscreen is the same as the MAC address of the assigned device name.

PROFINET device name: The name set in "Assign IP address and device name to slave".

Type of PG/PC interface: PN/IE.

PG/PC interface: The actual network adapter used. 11.

11. Select the slave device in turn, click Update List, and then click Assign Name.

Check whether the status of the node in "Accessible Nodes in Network" is "OK", for example, as shown in the figure below.

分配 PROFINET 设备	名称•							
-		组态的 PROFINI	T设备					
		PROFINET	备余称:	pnio_2				
		i i i i i i i i i i i i i i i i i i i	备类型:	PN4-16168	P%4-16168			
		在线访问						
		PGIPC接口	的类型:	🖳 PNRE		-		
		PGI	PC 接口:	Realtek PCIe GbE Par	- 🖲 🔟			
		10.07.14.16.00						
		设备过滤器						
		🛃 倪豊示同一	类型的设	备				
		🗌 仅显示参数	设置错误	的设备				
		🗌 仅置示没有	(名称的读	6				
	网络中的司访问	书点 :						
	IP 地址	MAC 地址	设备	PROFINET 设备名称	状态			
	192.168.0.3	00-A0-45-00-38-47	PNIO	pnio_1	🔒 设备名称不同			
	192.168.0.4	00-40-45-00-40-C8	PNIO	pnio_2				
- 1944								
a service of the serv								
					merala	4140 0127		
					35.007580			

Click Close to close the page.

7. Download the configuration structure

- 1. In the "Network View", select PLC
- 2. Click the D button in the menu bar to download the current configuration to the PLC.
- 3. In the pop-up "Extended Download to Device" screen, configure as shown below.

扩展的下载到设备			_					
	组态访问节点属于 "PLO	L1*						
	设备	设备类型	插槽	类型	地址		子网	
	PLC_1	CPU 1214C DC/D	1 X1	PN/IE	192.168.0	.1	PN/IE_1	
		PG/PC 接口的	类型:	PN/IE				
		PG/PC	接口:	Realtek	PCIe GbE Family Co	ontroller		•
	接口/子网的连接: PN/IE_1							٠
		第一个	网关:				-	۲
	选择目标设备:				显示所有兼	音的设备		Ŧ
	设备	设备类型	接口	类型	地址	E	标设备	
··· — [-	-	PN/IE		访问地址			
P								
2								
Mith LED								
							开始接	索(5)
在线状态信息:					🗌 仅显示错i	吴消息		
						下载(L)	取消	ŧ©)

- 4. Click the "Start Search" button.
- 5. Click "Download".
- 6. Select "Continue without synchronization".

0月11日今天注白动同些的再改。			
610 图书元法自动问》的建议。			
软件同步	状态	动作	
▼ PLC_1			
▼ '程序块'			
Main [OB1]	•	需要手动同步	
▼ 'PLC 变量'			
変量	•	需要手动同步	
產线広线比較	E.	左不同些的情"中下	(### 111)
离线性线比较	同語	在不同步的情况下	继续 取消

7. Select "Stop All".

▼ PLC_1 ▼ 保护	下载准备就绪。 保护系统,防止未授权的访问		
▼ 保护	保护系统。防止未授权的访问		
	Prop Press Provide Provide Property		
	连接到企业网络或直接连接到 internet 的设备必须采取合适的保护 措施以防止未经预权的访问。例如通过使用防火造或网络分段。有 关工业安全性的更多信息。请访问 http://www.siemens.com/industrialsecurity		
▶ 不同的模块	已组态模块与目标模块(在线)之间的差异		
▶ 停止模块	模块因下载到设备而停止。	全部停止	-
▶ 设备组态	删除并替换目标中的系统数据	下載到设备	
▶ 软件	将软件下载到设备	一致性下载	
	 > 不同的模块 > 停止模块 > 设备组态 > toot 	¥工业安全性的更多信息、活动向 http://www.simens.com/industrialsecurity 不同的模块 已组态模块与目标模块(在线)之间的差异 停止模块 後音组态 時序并營造目标中的系統數据 100000000000000000000000000000000000	关工业安全化的理多信息。请访问 http://www.siemens.com/industrialsecurity > 不同的模块 已组态模块与目标模块 (在线) 之间的差异 > 停止模块 模块因下频频设备而停止。 > 设备组态 脚床并曾换目标中的系统数据 > toth ために工程に行る

- 8. Click "Load".
- 9. Click "Finish".
- 10. Power the device back on.

8. Communication Connection

- 1. Click ^{III} button.
- 2. Click the "Go to Online" button to connect successfully, as shown in the figure below.



9. Check the device indicator

XB6-P2000H: P light is always on in green.

XB6-PN0002: P light is always on, L light is always on, B light is not on, R light is always on.

I/O module: P light is always on, R light is always on..

10. I/O Verification

1. Expand the project navigation on the left side and select "Monitor & Force Table", as shown in the figure below.



2. Double click "Add New Monitoring Table" to add a new monitoring table to the system, for example, as shown in the figure below.

项目树		项	目12	▶ PLC_1 [CPU 121	4C DC/DC/DC]	▶ 监控与强制表	≥> 监控表_3	-	- # = ×
设备										
- 5k	🔲 🖻	2	₫9	1Å 🛃 🛙	919	1 🖓 😤 📬				
			i	名称		地址	显示格式	监视值	修改值	9
▼ 🔄 项目12		1				<添加>				
📑 添加新设备										
📩 设备和网络										
PLC_1 [CPU 12										
📑 设备组态										
2 在线和诊断	=									
▶ 🔜 程序块										
▶ 🙀 工艺对象										
▶ 🚮 外部源文件										
▶ 📜 PLC 变量										
▶ 💽 PLC 数据类										
▼ 🤜 监控与强										
💣 添加新										
品 监控表_3										

3. Click button.

Open "Device Overview" to view the channel Q address (the channel address of the output signal) or I address (the channel address of the input signal). For example, the "Q Address" of the XB6-1616B module is 2 to 3, as shown in the figure below.

				🛃 拓打	视图	晶 网络视	图 🔡 设备视图	Γ	٦
设备概览									
	模块		机架	插槽	地址	Q 地址	类型		
	 PNIO 		0	0			XB6-PN0002		^
	PN-IO		0	0 X1			PNIO		
	XB6-3200B_1		0	1	25		XB6-3200B		
	XB6-3200A_1		0	2	69		XB6-3200A		
	XB6-1616B(W)_1		0	3	1011	23	XB6-1616B(W)		≡
			0	4					
			0	5					

4. Enter "QB3" in the address cell of the monitoring table, as shown in the figure below.

项] 12	PLC_1	[CPU 1214C DC/DC/DC]	▶ 监控与强制表	€ ▶ 监控表_3		_∎∎×
Þ	₹	1 🖉 🛛	0 91 % 27 📭 📬				
_	i	名称	地址	显示格式	监视值	修改值	9
1			QB3				
2							

5. Press "Enter" and the system will display as follows.

项	目12	PLC_1 [C	CPU 1214C DC/DC/	DC] ▶ 监控与引	異制表 ▶ 监控表	₹_3	_ # # ×
1	' 💣	11 🛃 😼 🗠	91 % 🖓 降	00- 1			
	i	名称	地址	显示格式	式 监视値	修改值	9
1			%QB3	十六进制	▼ 16#FF		
2							

- 6. Enter the value in the Modify Value cell and click Write to view the channel indicator. 8.
- 7. Enter IB+"I address" in the address bar to monitor the input module.

11. Parameter Setting

Setting the input filter

- 1. Open the Device View.
- 2. Select the input module and click "Module Parameters" to set the filtering, as shown in the figure below.

XB6-3200B_1 [XB6-3200B]			3.属性	11信息 21诊胆	f
常規 10 変量 系统常	鐵 文本				
▼常規 目录信息	模块参数				
输入 ▶ (11年25年)	XB6-32008 Parameter				
1/0 地址 研代标识符	XB6-3200B Parameter				
RELITION	Digital Input Filter:	3ms	×		
	模块故障				
		通过"保持上一个值"设置,无法检评估;	入的值状态。		
	模块故障时的输入值:	输入值 0			

After the configuration is finished, you need to re-power the module.

Set the output clear hold

- 1. Open Device View.
- 2. Select the output module, click "Module Parameters", and set the clear hold, as shown in the following figure.

PNIO [XB6-PN0002]	◎ 属性 13 信息 12 诊断 ■ ■ ▼
常規 IO 变量 系统常数 文本	
▶ 常规 横边分数	
▶ PROFINET接口 [X1]	
标识与维护 Setting for Clear/Hold	
模块参数	
硬件标识符 Data Clear or Hold Settings: Cl	ar 🔹
Shared Device	

Hold: Hold the output, the module output channel will keep output when the network communication is disconnected.

Clear: Clear the output, when the network communication is disconnected, the module output channel clears the output.

After the configuration is finished, it needs to be re-powered.

Set the analog range

- 1. Open the "Device View".
- 2. Select the analog module and click "Module Parameters" to set the analog range, for example, the following figure.

X86-A80V_1 (X86-A80V		्रह	性」信息	. 3 诊断	
 常規 10 変量 常規 目录信息 	系统常数 文本 模块参数				^ =
和いへ 模块参数 1/0 地址	Channel O Range Select:	-10V~10V -32768~32767	-		
硬件标识符	Channel 1 Range Select:	-10V~10V -32768~32767	-		
	Channel 2 Range Select: Channel 3 Range Select:	-10V~10V -32768~32767 -10V~10V -32768~32767	-		
	Channel 4 Range Select: Channel 5 Range Select:	-10V~10V -32768~32767 -10V~10V -32768~32767	-		
	Channel 6 Range Select:	-10V~10V -32768~32767	•		
	Channel 7 Range Select:	-10V~10V -32768~32767			

The default range "-10~10V -32768~32767".

After the configuration is finished, it needs to be re-powered.

7.3.2 Application in STEP 7-MicroWIN SMART software environment

1. Preparations

Hardware environment

A computer installed with STEP 7-MicroWIN SMART software

A Siemens PLC

Dedicated PROFINET shielded cables

A switching power supply

Module installation guide rail and fasteners

Module model::

Туре	Model	Number
PLC	S7-200 SMART	1
Coupler	XB6-PN2002ST	1
	XB6-3200A	1
VO Moduloo	XB6-0032A	4
I/O Modules	XB6-0032B	1
	XB6-A40V	1
End cover	XB6-CVR00	1

Device configuration files

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

Hardware configuration and wiring

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

2. Add a CPU

- 1. Open the STEP 7-MicroWIN SMART software.
- 2. Double click the left navigation tree button 🔤 CPU ST30 to bring up the "System Block" window
- 3. Select the CPU model, as shown in the figure below.

	系统块							×
EPU (PU \$130 (0C.DC.C) V02 04 00_00.00 10.0 Q0.0 6557 289-15730-00A00 S8 CPU \$130 (0C.DC.C)		模块		版本	输入	输出	订货号	
SB CPU ST20 (DC/DC/DC) EM 0 CPU ST40 (DC/DC/DC) EM 1 CPU ST40 (DC/DC/DC) EM 1 CPU ST40 (DC/DC/DC) EM 2 CPU ST40 (DC/DC/DC) EM 3 CPU ST40 (DC/DC/DC) EM 4 ST40 (DC/DC/DC) <t< td=""><td>CPU</td><td>CPU ST30 (DC/DC/</td><td>DC) 🔻</td><td>V02.04.00 00.00</td><td>10.0</td><td>Q0.0</td><td>6ES7 288-1ST 30-0AA0</td><td></td></t<>	CPU	CPU ST30 (DC/DC/	DC) 🔻	V02.04.00 00.00	10.0	Q0.0	6ES7 288-1ST 30-0AA0	
EM GPU \$130 (DC:00-0C) CPU \$180 (DC:00-0C) CP	SB	CPU ST20 (DC/DC/I		_				
	EMIO	CPU ST30 (DC/DC/	DCj					
	EM 1	CPU ST40 (DC/DC/I	DC)			_		
End CPU SR31 (ACDCRelay) CPU SR31 (ACDCRelay) EM4 (CPU SR41 (ACDCRelay) CPU SR41 (ACDCRelay) S445 S455	CM 1	CPU SR20 (AC/DC/	Relavi					
EM CPU SRAII AC/DCR4sy CPU SRAII AC/DCR4sy CPU SRAII AC/DCR4sy CPU SRAII AC/DCR4sy EX STATE	EM 2	CPU SR30 (AC/DC/	Relay)			_		
EM C PU (F329) (ACDC Preduy CPU (F329) (ACDC Preduy CPU (F349) (ACDC Preduy EM C PU (F349) (ACDC Preduy EM C PU (F340) (ACDC PREdux	EM 3	CPU SR40 (AC/DC/R	Relay) Relay)			_		
EMS (CPU CR30, (ACDCR-Rely) CPU CR30, (ACDCR-Rely) DOT CR30, (ACDCR-REL) DOT CR30, (ACDCR-REL) DOT CR30, (EM 4	CPU CR20s (AC/DC/	(Relay)					
	EM 5	CPU CR30s (AC/DC/	(Relay)					
■ 建爾(EPU CR4) (A_COC Relay) ■ 第5(EPU CR4) (A_COC Relay) ■ 第5(EPU CR4) (A_COC Relay) ■ 10-10.7 ■ 10-10.7		CPU CR40s (AC/DC/	(Relay) (Relay)					
■ 對常行CPU CEQU (ACOC Relay) ■ 助常行CPU CEQU (ACOC Relay) ■ 100 - 10.0 ■ 100 - 11.2 ■ 100 - 11.2 ■ 100 - 11.2 ■ 100 - 12.7 ■ 約 ■ 分 ■ 分 ■ 分 ■ 分 ■ 分 ■ 分 ■ 分 ■ 分	🔲 通信	CPU CR40 (AC/DC/F	Relay)	1				
- ■ 0.0 - 0.7 ■ 1.0 - 1.1.7 ■ 1.2 o - 12.7 ■ 数字重整32 ■ 数字重整32 ■ 身持303 ■ 分 ■ 数字重整32 ■ 数字目30 ※名称: ■ ■ 数字重整32 ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ■ 数字目30 ※名称: ■ ● 数字目 ■ ● 文 ■ ● (S - 50%) ■ ● 文 ■ ● (S - 50%) ■ ● 文 ■ ● (S - 50%) ■ ● 文 ■ ● (S - 50%) ■ (S - 50%) ■ ● 文 ■ (S - 50%) ■	🔲 数字	CPU CR60 (AC/DC/	Relay)	山對据固定为下面	的值,不能	(通过其它方:	式更改	
□ 110-11.7 □ 120-12.7 □ 非形型 □ 体形范围 □ 大全 □ 余学企图 □ 大会 □ 大 □ 大 □ 大 □ 大 □ 大 □ 大 □ 大 □ 大	🖸 1	0.0 - 10.7		Participation of the second se	HOME THE	MERE / (G / 55		
		1.0 - 11.7		IP 地址;				
■ (#子短期) ■ (#子短期) ■ (#井短期) ■ (#井短期) ■ (#注意用) ■ (····· 🛄 🚺	2.0 - 12.7 						
■ 19:00-00 ■ 29:20 ■ 20:00 ■ 20:0	🛄 奴子	金融山		子阿攬码:				
■ 高式 ■ 二 ■ 二 ■ 二 ■ 二 ■ 二 ■ 二 ■ 二 ■ 二								
	□ 点动			al MM大·				
背景时詞 法指遺信背景时间 (S - 50%) [10] マ 85405 端口 通过 R5405 端宮司現整 PLC 和 Hert 设备用未通信的通信参数 地址: 2 _ マ 法律案: 9.6.85ps マ 确定 取消				站名称:				
特条約4					,			
法接通信背景时间 (S - 50%) 10 ▼ 第5465 端口 通过 R5485 说册可限整 PLC 和 Heft 设备用未通信的通信参数 地址: 2 ▼ 波特案: 9.6 Ktops ▼ 			背景时间					
125405 編ロ 通过 R5485 设置可调整 R.C和 H44 设备用未通信的通信参数 地址: 2 波持案: 9.6 Kbps 确定 取消			选择通 10	信背景时间 (5 - 50 💌	%)			
通过 R5485 设置可调整 FLC和 HMI 设备用未通信的通信参数 地址: 2 波持案: 9.6 Kbps _ 确定 取消			BS485 端	1				
地址: 2 <u>-</u> 波排案: 9.6 Kbps <u>-</u> 			通过 R	5485 设置可调整 PL	.C和HMI设	备用来通信的	的通信参数	
→2014 - 1 液神筆: 9.6 Kbps ▼ 				+81+1+ •	2 -			
波特擎: 9.6 Kbps ▼ 				AGML -				
确定 取消				波特率:	9.6 Kbps	•		
							确定	取消

- 4. Double-click the Navigation Tree button 里通信 to bring up the "Communication" screen.
- 5. Click 查找 CPU button.

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6. Click the "Settings" button to modify the IP address.

通信	×
通信接口 Realtek PCIe GBE Family Controller.TCPIP.Auto.2 ▼ ■ 1499 CPU ■ 152.168.1.100 (smart200) ◎ 添加 CPU ■ 152.168.1.100 (1)	按下 1編編 " 技祖以理改所选 CPU 的 IP 動調和站会称。 按下 "内
	确定取消

3. Manage GSD files

Add GSD files

- 1. Click "File -> GSDML Management".
- 2. Click the "Browse" button.
- 3. Select the GSDML file you want to import.

Delete a GSD file

- 1. Click "File -> GSDML Management".
- 2. Select the GSDML files to be deleted in the check box.
- 3. Click "Delete".

4. Device Naming

- 1. Select "Tools -> Find PROFINET Devices".
- 2. Click "Find Device".
- 3. Click Edit to change the device name.

5. Configuring PROFINET Networks 1.

- 1. Click Tools -> PROFINET to open the PROFINET Configuration Guide.
- 2. Select the PLC role as "PROFINET Controller".

PROFINET 配置内印		×
C PROFINET (F)4 CPU ST30(prart200)	■会議が知道を送かけ設置 Harriset 同時、Harriset 設置出意力活発中主式計算機、同時活動一些下面詳加く中小	
	NAR All-UNA Incore (198	
	2-9 T-9 2.6 DtA	

3. Click on "Next".

4. Configure the controller parameters as shown in the figure below.

控制器参数 以太网端口 ☑ Ⅳ 地址数据图		方式更改		
IP 地址: 子网掩码: 默认网关:	192 . 168 . 1 . 100 255 . 255 . 255 . 0 0 . 0 . 0 . 0	站名称: smart200	发送时钟: 1.0 启动时间: 10	000 v ms
设备 表 设备号 1	<u>类型</u> XB6-PN0002V10.00.00	设备名 pnio	IP 地址 192.168.1.12	注释
<				>
添加	刪除			,

The device name should be the same as the module name, and the IP address should be set in the same network segment as the PLC.

5. Click Next to add I/O modules, for example, as shown in the following figure.



6. Click "Next" and click "Generate" button.

6. Download the program

Tel

1. Click the "Download" button, the following dialog box will pop up.

1.2%	
将块下载到 CPU 选择要下载的块。	
① ^{单击} '下载''开始	
	选项
✓ 程序決 ✓ 約据決	☑ 从 RUN 切換到 STOP 时提示 ☑ 从 STOP 切换到 BUN 时提示
☞ 系统块	□ 成功后关闭对话框
2 单击获取帮助和支持	下载 关闭

2. Click "Download".

下载	×
将块下载到 CPU 选择要下载的块。	
① 下载已成功完成!	
块	选项
▼ 程序块	☑ 从 RUN 切換到 STOP 时提示 □ 从 STOP 切換到 PUN 时提示
▶	▶ 成功后关闭对话框
④单击获取帮助和支持	下载 关闭

After the download is completed, re-power the module to process.

- 7. Test Data
 - 1. Click the "RUN" button to put the CPU in RUN mode.

) 🚅 🖬 😂) =		项目 1 - STEP 7-Micro/WIN SMART
9	文件 编辑	700253	PLC 溜述 工具 帮助
要			
3 🗆	0 0 0	_	
1051	AG1	_	A MAIN X SOKO INLO
14	》 新聞功能		程序定主编
4	CPU ST30		1 程序规注释
÷	1 程序块		
	1 行時表		
-	Shight		
H	1 系统快快		
÷.	🔄 交叉引用		
11	夏 通信		2 输入注释
	N 103字		
100	1 m		
TH	🔄 収鑑夹		
Ð	🔤 位逻辑		
Ð	B\$\$#		
1	1 通信		3 Tel A/F14
. in the second	10.00		
÷.	1 计频器		輸出費口
Ð	1 洋点运算		· 3 章
	1 金額広算		SBR_0 (SBR0)
1			NT OINTO
B	代送		RUN X
÷	程序控制		正在描译數遇见
Ð	1 移位/個环		ペスホーの(キード) * の 1 編 ペ ? 是否将 CPU 置于 RUN 模式?
10	1 字符串		正在遠洋系统地。 コーロコの時、の小地湾、の小牧牛
1			
÷.	PROFINET		請送登计:0
Ð	2 库		H 4 > H (###
Ð-	3] 调用子例程		状态图表
			1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-
			地址 杨式 当前值 斜面
			1 有符号
			2 有符号
			3 4 77-E

- 2. Click "OK".
- 3. Double click "Status Icon -> Chart 1" in the navigation tree, the system displays the status icon.
- 4. Enter the corresponding channel address and data format, where you can force and input monitoring for I/O modules, as shown in the figure below.

×								
状态图表								
🛅 - 🎽 - 🕞 🖬 🚓 🥒 🔒 🖀 🐩 🎨 🗷 🗢 -								
	地址	格式	当前值	新值				
1	QW128	十六进制	16#FFFF					
2	QW130	十六进制	16#0000					
3	QW132	十六进制	16#0000					
4	IW128	十六进制	16#0000					
5		有符号						
6		有符号						
(()) \ <u>B</u>[表1								

8 FAQ

8.1 When updating accessible devices, the device is not found

- 1. Make sure that the botu software is installed correctly.
- 2. Make sure there is no other software occupying the network adapter used by the Botu software.
- 3. Make sure the network cable, network card and network port can work properly.
- 4. IP address or MAC address conflict..

8.2 Load button is gray when downloading configurations

- 1. Confirm that there is no forced value in the PLC.
- 2. Verify that the PLC is in stop state.