

# FB20 series IP20 wide form I/O quick guide manual

Version 1.2, 2025-01-14



Tianjin Elco Automation Co.,Ltd



## CONTENT

1. Product Introduction	2
2. Version change records	2
3. Regarding manual acquisition	2
4. Warranty Statement	2
5. FB20 series introduction	4
5.1. Introduction to Appearance and Function	4
5.2. Technical specifications	5
5.3. Dimension drawing	6
6. Mechanical installation and disassembly	7
6.1. Module installation	7
6.2. Module disassembly	7
6.3. Installation position and minimum distances	8
7. Electrical installation and wiring1	0
7.1. Cable specification1	0
7.1.1. Communication cable1	0
7.1.2. Power and signal cables1	1
7.2. FB20 terminal definition and I/O address	2
7.2.1.FB**-3200P(N)-TS1	2
7.2.2.FB**-1616P(N)-TS1	2
7.2.3.FB**-0032P(N)-TS1	3
7.2.4.FB**-1616UP(N)-TS1	3
8. Configuration and testing1	5
8.1. Configuration and test in Siemens PORTAL	5
8.1.1. GSD file1	5
8.1.2. Configuration Example in Siemens Portal1	6
8.2. Configuration and test in Omron Sysmac Studio 2	22
8.2.1. IP Address Settings	22
8.2.2. Configuration Example in Omron Sysmac studio . 2	23
9. Fault diagnosis LEDs	32
Appendix 3	33





#### 1. Product Introduction

The FB20 series IP20 wide form I/O modules adopt an integrated design of bus interface, I/O signal and power supply, and is installed on a standard 35mm DIN rail. Currently, it mainly offers 32-bit digital modules, compatible with bus protocols such as Profinet, EtherCAT, Ethernet/IP, and CC-LINK IE Field BASIC.

The FB20 series I/O terminals adopt a detachable and tool free design, equipped with 24VDC and 0V equipotential terminals equal to the number of I/Os, which facilitates sensor power supply wiring and maintenance.

The FB20 series modules are suitable for application scenarios such as position sensor signal acquisition, alarm light output, and valve island control, providing cost-effective I/O product solutions for industries such as semiconductors, photovoltaics, and logistics.

## 2. Version change records

<b>Revision date</b>	Release version	Change content
2024-10	V1.0	First edition manual release
2024-12	V1.1	Add Omron configuration examples
2025-01	V1.2	Add Profinet data structure

## 3. Regarding manual acquisition

This manual is not shipped with the product. If you need to obtain an electronic PDF file, you can obtain it through the following methods:

Log in to the official website of ELCO (www.elco holding. com. cn), search for keywords, and download.

Use WeChat to search and follow the official account of "ELCO Automation" to obtain the product manual.

Contact the sales engineer of ELCO Automation in your region to obtain the latest manual materials.

## 4. Warranty Statement

Under normal use, if the product malfunctions or is damaged, ELCO Automation is responsible for an 18 months warranty (from the date of manufacture, the delivery date shall prevail, and any contractual agreements shall be executed in accordance with the agreement). If it exceeds 18 months, maintenance fees will be charged.

Within 18 months, repair fees will be charged for product damage caused by the following circumstances.

- Failure to operate this product according to the instructions in the manual, resulting in product damage.
- Damage to products caused by fires, floods, and abnormal voltage.
- Using this product for abnormal functions may cause product damage.





- Damage to the product caused by exceeding the specified usage range.
- Secondary damage to products caused by force majeure factors such as natural disasters, earthquakes, and lightning strikes.

The service fees shall be calculated according to the unified standards of ELCO. If there is a contract, the principle of contract priority shall be applied.



#### 5. FB20 series introduction

## 5.1. Introduction to Appearance and Function



No.	Name	Function	Status						
1	Module fixed buckles								
	-	Used to fix the module on the installation rail	Pull up: installation position; Press down: locking position						
2	Bus input interface	•							
	X1	RJ45,Female,with indicators	Blinking: There is network data exchange Extinguished: No network connection						
3	Bus output interfac	ce							
	X2	RJ45,Female,with indicators	Blinking: There is network data exchange Extinguished: No network connection						
4	Power supply term	inal block							
	L	24VDC+	-						
	М	0V	-						
	PE	Protective Ground	-						
5	Diagnostic indicate	ors							

Tianjin Elco Automation Co.,Ltd



	PW	Power status indication					
	BF	Bus status indication					
	SF	Module error indication					
6	I/O status indicators						
	1-32	I/O indicators	Green: I/O signal on; Off : No I/O signal:				
7	I/O terminal block	(S					
8	External power supply terminal 24 V						
9	External power supply terminal 0V						

## 5.2. Technical specifications

Order Data									
Product model	FBEC-3200P-TS	FBEC-1616P-TS	FBEC-0032P-TS	FBEC-1616UP-TS					
Description	EtherCAT,	EtherCAT,	EtherCAT,	EtherCAT,					
Description	32DI, PNP	16DI/16DO, PNP	32DO, PNP	16DI/16DIO, PNP					
Product model	FBEC-3200N-TS	FBEC-1616N-TS	FBEC-0032N-TS	FBEC-1616UN-TS					
Description	EtherCAT,	EtherCAT,	EtherCAT,	EtherCAT,					
Description	32DI, NPN	16DI/16DO, NPN	32DO, NPN	16DI/16DIO, NPN					
Product model	FBPN-3200P-TS	FBPN-1616P-TS	FBPN-0032P-TS	FBPN-1616UP-TS					
Description	Profinet,	Profinet,	Profinet,	Profinet,					
Description	32DI, PNP	16DI/16DO, PNP	32DO, PNP	16DI/16DIO, PNP					
Product model	FBPN-3200N-TS	FBPN-1616N-TS	FBPN-0032N-TS	FBPN-1616UN-TS					
Description	Profinet,	Profinet,	Profinet,	Profinet,					
Description	32DI, NPN	16DI/16DO, NPN	32DO, NPN	16DI/16DIO, NPN					
Product model	FBEI-3200P-TS	FBEI-1616P-TS	FBEI-0032P-TS	FBEI-1616UP-TS					
Description	Ethernet/IP,	Ethernet/IP,	Ethernet/IP,	Ethernet/IP,					
Description	32DI, PNP	16DI/16DO, PNP	32DO, PNP	16DI/16DIO, PNP					
Product model	FBEI-3200N-TS	FBEI-1616N-TS	FBEI-0032N-TS	FBEI-1616UN-TS					
Description	Ethernet/IP,	Ethernet/IP,	Ethernet/IP,	Ethernet/IP,					
Description	32DI, NPN	16DI/16DO, NPN	32DO, NPN	16DI/16DIO, NPN					
Product model	FBCB-3200P-TS	FBCB-1616P-TS	FBCB-0032P-TS	FBCB-1616UP-TS					
Description	CC-LINK IE FB,	CC-LINK IE FB,	CC-LINK IE FB,	CC-LINK IE FB,					
Description	32DI, PNP	16DI/16DO, PNP	32DO, PNP	16DI/16DIO, PNP					
Product model	FBCB-3200N-TS	FBCB-1616N-TS	FBCB-0032N-TS	FBCB-1616UN-TS					
Description	CC-LINK IE FB,	CC-LINK IE FB,	CC-LINK IE FB,	CC-LINK IE FB,					
Description	32DI, NPN	16DI/16DO, NPN	32DO, NPN	16DI/16DIO, NPN					
Interface type									
Bus		2×RJ45,10	0 BASE-TX						
Power		3-pos sprir	ng terminal						
1/0		4 × 8-pos pluggal	ole spring terminal						
Aux terminals	8×8-pos pluggable spring terminal								



Electrical data								
Input channels	32	16	-	Max.32				
Input power	Max.125 mA/CH,	Max.125 mA/CH,		Max.125 mA/CH,				
supply current	less 4 A in total	less 2 A in total	-	less 2 A in total				
Input filtering	1	6ms	_	1.6ms				
delay	L	.0115	-	1.01115				
Output channels	-	16	32	Max.16				
Output current	-	Max.5	00 mA/CH, less 4 A	in total				
Load type	-	Indicator lig	hts, miniature soleno	id valves, etc.				
Output frequency	-	Resistive load u	p to 100Hz, inductive	e load up to 5Hz				
Diagnosis								
Bus status		LED indicators, com	munication message					
Power status		LED inc	licators					
Short circuit and		LED inc	licatora					
overload			licators					
General data								
IP grade		IP2	20					
Temperature	Working tempe	rature: -5 ℃ … 60 ℃,	Storage temperatur	e: -25 ℃ … 70 ℃				
Humidity		15 %-95 %, no	condensation					
Working altitude	0-2000 m							
Pollution degree	II							
Module size		70 mm x 100 m	тт у 270 тт					
H×W×D		70 mm × 120 r	1111 × 37.9 11111					
E 2	Dimonoion	drowing						

### 5.3. Dimension drawing









## 6. Mechanical installation and disassembly

## 6.1. Module installation

The installation of FB20 product can be carried out according to the steps shown in the following figure:



STEP1: Pull out the two guide rail buckles of the module with force upwards, or use a straight screwdriver to remove them;

STEP2: After the module is inserted into the guide rail, press down on the buckle and lock it in place to complete the fixed installation.

## 6.2. Module disassembly



Use a flathead screwdriver or similar tool to pry up the rail lock, and then pull out the module in a direction away from the DIN rail.

The I/O terminals of the module can be removed separately for easy module replacement.

## ATTENTION

During installation, align the module with the DIN rail and press the fixing device in the direction indicated by the arrow. After installation, there will be a noticeable clicking sound; change the position of the locking device slightly; after installing the module properly, make the locking device clamp the upper edge of the rail; to avoid damaging the product, do not apply excessive force.



## ATTENTION

The mechanical installation and disassembly of modules require qualified professional mechanical personnel to operate and pay attention to the correct wearing and use of labor protection equipment.



#### 6.3. Installation position and minimum distances

Mount the mounting rail horizontally for the specified installation position. The connection surfaces of the coupler and the I/O modules must face forwards. This can be seen from the illustration.

The components are ventilated from bottom to top, which enables optimum cooling of the electronics by convection ventilation. The direction specification "down" corresponds to the direction of the positive acceleration due to gravity.





#### Observe minimum distances

Maintain the distances to neighboring devices and control cabinet walls specified in the figure. This is the only way to ensure optimum convection cooling.

If sufficient convection cooling is not ensured, the devices may overheat and be damaged.



## 7. Electrical installation and wiring

#### 7.1. Cable specification

#### 7.1.1. Communication cable

Bus communication uses shielded network cables for data transmission,

without short circuits, misalignment, and poor contact; The length of the cable

between devices cannot exceed 100m, as exceeding this length will cause

signal attenuation and affect normal communication. The following

specifications of communication cables are recommended:

Item	Specification					
Cable type	Elastic crossover cable, S-FTP, category 5					
Standarda mat	EIA/TIA568A, EN50173, ISO/IEC11801					
Standards met	EIA/TIA bulletin TSB, EIA/TIA SB40-A&TSB36					
Conductor section	AWG26					
Wire type	Twisted pair					
Wire pair	4					

Pre-wired connectors are better for communication and construction. Elco pre-wired connectors can provide customized cable material and cable length in accordance with communication technology requirements. The following

Model	Description
E16DA4002M020	RJ45-M12 double-ended pre-wired Ethernet connector, male straight, D-CODE, 4-pin, Cat5e, PVC, 2 M, fixed installation
E66D04002M020	RJ45-RJ45 double-ended pre-wired Ethernet connector, male straight-male straight, 4-pin, Cat5e, PVC, 2 M, fixed installation
E16DA4004M020	RJ45-M12 double-ended pre-wired Ethernet connector, male straight, D-CODE, 4-pin, Cat5e, PVC, 2 M, suitable for drag chain
E66D04004M020	RJ45-RJ45 double-ended pre-wired Ethernet connector, male straight-male straight, 4-pin, Cat5e, PUR, 2 M, suitable for drag chain

#### Elco Ethernet connectors are available:





For more selection of Ethernet connectors, please refer to Elco's "Connectivity System Catalog".

## 7.1.2. Power and signal cables

The FX20 series adopts tool-free spring wiring terminals, and the wiring needs to be equipped with tube type cold pressing cable lugs. Please refer to the following figure for the stripping length and cable lug specifications:



Standard cable crimper can be used for pressing the wire ear, as shown in the following figure:



The wire connection does not need tools, and the wiring method is as follows:

- 1) Install the wire ear on the wire;
- Insert the wire installed with the wire ear into the plug-in terminal to its most;
- 3) Pull the cable to ensure its fixed securely.
- To release the wire:
- 1) Press the terminal spring button with your hand or a flat screwdriver
- 2) Pull out the wire and release the button.





7.2. FB20 terminal definition and I/O address





#### **Input 4 Bytes**

BYTE n	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l n.7	l n.6	l n.5	l n.4	l n.3	l n.2	l n.1	l n.0
Terminal No.	i8	i7	i6	i5	i4	i3	i2	i1
BYTE n+1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l (n+1).7	l (n+1).6	l (n+1).5	l (n+1).4	l (n+1).3	l (n+1).2	l (n+1).1	l (n+1).0
Terminal No.	i16	i15	i14	i13	i12	i11	i10	i9
BYTE n+2	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	i (n+2).7	i (n+2).6	i (n+2).5	i (n+2).4	i (n+2).3	i (n+2).2	i (n+2).1	i (n+2).0
Terminal No.	i24	i23	i22	i21	i20	i19	i18	i17
BYTE n+3	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l (n+3).7	l (n+3).6	l (n+3).5	l (n+3).4	l (n+3).3	l (n+3).2	l (n+3).1	l (n+3).0
Terminal No.	i32	i31	i30	i29	i28	i27	i26	i25

n: Starting byte of configuration





Tianjin Elco Automation Co.,Ltd



		סטיםו		forme	VO	madulaa	aanaiaa	anaration	manual
FBZU	senes	IP20	wide	IOIIII	I/U	modules	concise	operation	manuai

1 B20 control in 20 mail form is o modulos controlos operation mandal									
Address	l (n+1).7	l (n+1).6	l (n+1).5	l (n+1).4	l (n+1).3	l (n+1).2	l n+1).1	l (n+1).0	
Terminal No.	i16	i15	i14	i13	i12	i11	i10	i9	
Output 2 Bytes									
BYTE n	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Address	Q n.7	Q n.6	Q n.5	Q n.4	Q n.3	Q n.2	Q n.1	Q n.0	
Terminal No.	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	
BYTE n+1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Address	Q(n+1).7	Q(n+1).6	Q(n+1).5	Q(n+1).4	Q(n+1).1	Q(n+1).2	Q(n+1).1	Q(n+1).0	
Terminal No.	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9	

n: Starting byte of configuration

## 7.2.3. FB\*\*-0032P(N)-TS



Output 4 Bytes										
BYTE n	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
Address	Q n.7	Q n.6	Q n.5	Q n.4	Q n.3	Q n.2	Q n.1	Q n.0		
Terminal No.	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1		
BYTE n+1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
Address	Q (n+1).7	Q (n+1).6	Q (n+1).5	Q (n+1).4	Q (n+1).3	Q (n+1).2	Q (n+1).1	Q (n+1).0		
Terminal No.	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9		
BYTE n+2	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
Address	Q (n+2).7	Q (n+2).6	Q (n+2).5	Q (n+2).4	Q (n+2).3	Q (n+2).2	Q (n+2).1	Q (n+2).0		
Terminal No.	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17		
BYTE n+3	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0		
Address	Q (n+3).7	Q (n+3).6	Q (n+3).5	Q (n+3).4	Q (n+3).3	Q (n+3).2	Q (n+3).1	Q (n+3).0		
Terminal No.	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25		
n: Starting byte of configuration										

7.2.4. FB\*\*-1616UP(N)-TS





Input 4 Bytes								
BYTE n	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l n.7	l n.6	l n.5	l n.4	l n.3	l n.2	l n.1	l n.0
Terminal No.	i8	i7	i6	i5	i4	i3	i2	i1
BYTE n+1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l (n1).7	l (n+1).6	l (n+1).5	l (n+1).4	l (n+1).3	l (n+1).2	l (n+1).1	l (n+1).0
Terminal No.	i16	i15	i14	i13	i12	i11	i10	i9
BYTE n+2	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l (n+2).7	l (n+2).6	l (n+2).5	l (n+2).4	l (n+2).3	l (n+2).2	l (n+2).1	l (n+2).0
Terminal No.	i24	i23	i22	i21	i20	i19	i18	i17
BYTE n+3	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	l (n+3).7	l (n+3).6	l n+3).5	l (n+3).4	l (n+3).3	l (n+3).2	l (n+3).1	l (n+3).0
Terminal No.	i32	i31	i30	i29	i28	i27	i26	i25
Output 2 Bytes	\$							
BYTE n	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	Q n.7	Q n.6	Q n.5	Q n.4	Q n.3	Q n.2	Q n.1	Q n.0
Terminal No.	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1
BYTE n+1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Address	Q (n+1).7	Q (n+1).6	Q (n+1).5	Q (n+1).4	Q (n+1).1	Q (n+1).2	Q (n+1).1	Q (n+1).0
Terminal No.	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9
n: Starting byte	e of configura	tion						



## 8. Configuration and testing

#### **8.1.** Configuration and test in Siemens PORTAL

#### 8.1.1. GSD file

Use a GSD file (in XML format) to configure the FB20 series I/O modules. The GSD file is used to integrate the FB20 module as a standard Profinet I/O into your system.

The Siemens Portal programming software commonly used in Profinet systems integrates GSD files according to the following steps:

8.1.1.1. Run the Portal software and select "Options>Manage General Station Description Files\_GSD" from the menu bar.



8.1.1.2. In the next dialog box, select the GSD file to install, and then click "Install" to proceed with the installation operation.

Manage general station description       Installed GSDs     GSDs in the p       Source path:     E:\ELCO_T/F\Test Property	n files project grams\FB20\	AdditionalFiles\(	SSD	×
Content of Imported path	Version	Language	Statuc	Info
GSDML-V2.42-ELCO-FBPN-202403	V2.42	English	Not yet installed	FBPN Mod
<				>
			Delete Install	Cancel

8.1.1.3. The newly installed FB20 modules can be found in the "Other Field Devices>PROFINET-IO>I/O>ELCO>FBPN" hardware directory.





8.1.1.4. Users configure FBPN series I/O modules in Portal based on the actual model used.

#### 8.1.2. Configuration Example in Siemens Portal

This example uses FB20 as the Profinet slave station, model: FBPN-1616P-TS. By connecting Siemens PLC - CPU1211C through Profinet bus, all power supply and bus connections have been completed by default. The configuration steps are as follows:

8.1.2.1. Create a new Portal project.

Open Siemens Portal software, click "Create New Project", modify the "Project Name" to "FB20 test", select the save path, and click "Create"



OIS Stemens					
					Totally Integrated Automation PORTAL
Start			Create new project		
			Project name:	FB20 test	
Devices & networks	10 A	Open existing project	Path:	C:\Users\Administrator\Desktop	
-		Create new project	Version:	V15	
PLC programming		Migrate project	Author:	Administrator	
		Close project	Comment:		
Motion & technology	-				~
Visualization					Create
Online &		Welcome Tour			
Diagnostics	100	First stone			
		Installed software			
		Нер			
		Ilsor interface language			
		So oser interface language			
Project view					
		and the second sec			

- 8.1.2.2. Install the GSD file for ELCO FB20 series I/O products, refer to the relevant content in "9.1.1 GSD File" for specific methods.
- 8.1.2.3. Double click on "Add New Device" on the left and select the PLC model used in the "Controller" window.

🔁 🔒 Save project 🚊 🐰 🗉 🗊 🗙	•> ± (여 ± 🐻 🗉 🛛	🛛 🖳 🖉 Go online	🖉 Go offline 💄 🖪 🖪 🖉 🛪	Search in proie	as 1.04	-	Totally Integrated A	utomation PORTA
	I FB20 test → Dev	Add new device				× _ = = ×	Hardware catalog	<b>P</b> 10 1
Devices		Device name:				vice view	Options	
8	Network 11 Co	PLC_1				erview 4 >		0
							× Catalon	
FB20 test			Controllers	Device:			- catalog	ant as
Add new device			<ul> <li>SIMATIC \$7-1200</li> </ul>				Geatchs	
📥 Devices & networks			✓ Im CPU		1 <sup>10</sup> 252		Filter Profile: <all></all>	· E
Ungrouped devices		Controllers	CPU 1211C AC/DC/Rly				Controllers	
Security settings			CPU 1211C DC/DC/DC			-	<ul> <li>Ни</li> </ul>	
🕨 🙀 Common data			6ES7 211-1AD30-0XB0		CPU 1211C DC/DC/DC	-	PC systems	
Documentation settings			6ES7 211-1AE31-0XB0			-	Drives & starters	
Languages & resources			6ES7 211-1AE40-0X80	Article no :	6ES7 211-1AE40-0XB0		Network components	
Online access			CPU 1211C DC/DC/Rly	Article IIo	003721111124010300	-	Detecting & Monitoring	
Card Reader/USB memory		HM	CPU 1212C AC/DC/Rly	Version:	V4.2	-	Distributed I/O	
			CPU 1212C DC/DC/DC				Power supply & distribution	
			CPU 1212C DC/DC/Rly	Description:			Field devices	
			CPU 1214C AC/DC/Rly	Work memor	y 50 KB; 24VDC power supply with		<ul> <li>Other field devices</li> </ul>	
			CPU 1214C DC/DC/DC	on board; 3 h	igh-speed counters (expandable			
		PC sustants	CPU 1214C DC/DC/Rly	with digital s	ignal board) and 4 pulse outputs on			
		i e systems	CPU 1215C AC/DC/Rly	board; signal	board expands on-board I/O; up to			
			CPU 1215C DC/DC/DC	communicat	ion; 0.04 ms/1000 instructions;			
			CPU 1215C DC/DC/Rly	PROFINET inte	erface for programming, HMI and	-		
			CPU 1217C DC/DC/DC	PLC to PLC co	mmunication			
			CPU 1212FC DC/DC/DC					
			CPU 1212FC DC/DC/Rly					
Details view			CPU 1214FC DC/DC/DC					
			CPU 1214FC DC/DC/Rly					
			CPU 1215FC DC/DC/DC					
	<u>&lt;</u>		CPU 1215FC DC/DC/Rly			>	4	
Name			Unspecified CPU 1200					
	General							
	General							
	No 'pror	Open device view			OK Cancel			
	No brok							
	No 'proper	ties can be shown at the	moment, inere is either no object selected or t	le selected obje	ct does not nave any displayable prop	erties.		
							> Information	

8.1.2.4. Double click on the "Device Configuration" window on the left, select "Properties" -->"PROFINET Interface [X2]" -->"Ethernet Address" in the "Device View" window, and set the IP address of the PLC.



Project tree		FB20 test	PLC_	1 [CPU	1211C	DC/DC/	DC]								_ 7 5	X
Devices										<b>2</b> T	opology view	h N	etwork view	De	vice view	٦
商	💷 🛃	H PLC_1	[CPU 12	11C]	-		🖻 🔚 🗄 I	• 🖬 🛛	Devi	ce overview						
								^	*	Module		Slot	I address	Q address	Туре	
▼ FB20 test	^				_	_		=				103				^
Add new device			103	102	101		1					102				
Devices & networks		Rack_0					International States					101				
PLC_1 [CPU 1211C DC/DC/DC]						SILVILKS				<ul> <li>PLC_1</li> </ul>		1			CPU 121	
Device configuration	_									DI 6/DQ	4_1	11	0	0	DI 6/DQ 4	
😟 Online & diagnostics	=					201				AI 2_1		12	6467		AI 2	
Program blocks						1		ā				13				
Technology objects										HSC_1		1 16	100010		HSC	
External source files						(m)				HSC 2		1 17	100410		HSC	
🕨 🎑 PLC tags										HSC 3		1 18	1008 10		HSC	
PLC data types								-		HSC 4		1 19	101210		HSC	
Watch and force tables								~		HSC 5		1 20	1016 10		HSC	~
🕨 📴 Online backups		<	> 10	00%			]		<	1.50_5		120	101010		>	
🕨 🔀 Traces												(A)				
Device proxy data		PROFINET	interfac	ce_1 [N	Nodulej					<u> </u>	Properties	1 Inf	o 追 🛛 🔂 Dia	agnostics		
Program info		General	10	tags	Syste	em cons	tants	Texts								
PLC alarm text lists		General	_							Set IP address in t	he project		_			
Local modules		Ethernet a	ddresse						<u> </u>				-			
Ungrouped devices		Time synch	uonizati	-						IP address:	192 . 168 . 0	0.1				
Security settings		Operating	mode							Subnet mask:	255 . 255 . 3	255.0				
Common data	~	Advanced	ontions							Use router			_			
Y Details view		Advanced	options							Denter edderer			7			
· Details view		web serve	raccess						-	Router address:						
									0	IP address is set d	irectly at the dev	ice				

- 8.1.2.5. Add FB20 module and establish communication connection with PLC.
- a) Double click on "Devices and Networks" on the left to enter the "Network View" interface. Select "Other Field Devices ->PROFINET IO ->I/O ->ELCO ->FB20" from the "Hardware Catalog" and add FBPN-1616P-TS to the network by double clicking or dragging.

Devices       Topology view	
Image: Section 1     Image: Section 2     Image: Section 2 <td></td>	
FR20 test     A     FR20 test     FR20 test     A     FR20 test     A     FR20 test	
Product     Additional Effective     Aditional Effective     Aditional Effective     Aditio	
Price Set     Price Set       Under & despects     Price Set       Device Set     Price Set	
Imported a networks     Imported a networks       Import (Networks)     Import (Networks)       Import (Networks)	
the C - LCRU 121 C COCCCC     Construction     Const	~
III Device consignation     > □     □     > □     □     > □     □     > □     □ <t< td=""><td></td></t<>	
So United Subjects Solutions Soluti	
Comparison	
Section 2012	
Groups     Construction	
b The Andrews	
Lig PLC data types	
> 🔤 Watch and force tables	
▶ 🙀 Online backups 🗧 🗧 📰 🔰 100% 💌	
► Traces S7.1200 station 1 [S7.1200 Station]	
Construction of the second station of t	
Program info General IO tags System constants Texts	
PLC alarm text lists     General     General     General	
Local modules	1.0
Project information	
Ferhouszenis serungs	
P Dotali v dov	
Parme: S/12/00 Station_1	
Comment:	
E871-32007-75	
Name I I I I I I I I I I I I I I I I I I I	
Author: Administrator Figure 1 Perg20	
▶ <b>1</b> F20	
U U U U I I I I I I I I I I I I I I I I	
► Dig Spice of Visiteway	~
> Information	the second s

b) Click on 'Not assigned' with the mouse and select 'PLC\_1. PROFINET Interface \_1'.

P	roject Edit View Insert Online Options 🤻 🍽 🛄 Save project 💻 🗶 👫 🕼 🗙 🕊	Tools Window Help 호 (객 초 같) [만 [1] 및 [2] 양 Go online 양 Go offline Å? [만 [1] X = 1] <search :<="" in="" projects="" th=""><th>Ga</th><th></th><th>Totally Integrated Autom</th><th>ation</th><th>L</th></search>	Ga		Totally Integrated Autom	ation	L
	Project tree 🔲 🖣	FB20 test > Devices & networks		_ # = ×	Hardware catalog		T
	Devices	ar Topology view	hetwork v	view 🕅 Device view	Options		۲
	11 II I	💦 Network 🛗 Connections 🔣 HM connection 💌 🛺 Relations 🕎 👯 🔛 🛄 🔍 ±	<b>-</b>	Network overview 4 >			Hard
			^	Y Device	✓ Catalog		War
ę	▼ FB20 test			<ul> <li>\$7-1200 station_1</li> </ul>	<search></search>	féi léi	
5	Add new device	PLC 1 FROM		PLC_1	Elter Profile:		18
2	Devices & networks	CPU 1211C FBPN-1616P-TS FIRM	_	<ul> <li>GSD device_1</li> </ul>	h Distributed I/O		0
ŝ.	• []] PLC_1 [CPU 1211C DC/DC/DC]	Not assigned		FBPN	bistributed ito	~	
ē	Device configuration	Select IO controller			Power supply & distribution		
	Section 2 Contine & diagnostics	PLC_1.PROFINET interface_1			Field devices		8
	🕨 😼 Program blocks				<ul> <li>Other field devices</li> </ul>		19
	Technology objects				Additional Ethernet devices		F
	External source files				PROFINETIO		12
	PLC tags				Drives		8
	PLC data types				Encoders		50
	Watch and force tables				Gateway		
	Online backups		~				1
	Traces	< II > 10%	- Ÿ 🖳	<u>(</u> )	- THE ELCO		E a



c) The FB20 module is connected to the PLC for communication.

		FB20 test > Devices & ne	tworks			_ # = ×	Hardware catalog	11
Devices				🚪 Topology view	A Network vie	w Device view	Options	
3	•	Network Connections	HMI connection	ions 🕎 👯 🖽 🛄 🍳 ±		Network overview 4 +		
				# IO system: PLC_1.PROFINET IO-	System (100) ^	Y Device	✓ Catalog	
FB20 test	^				=	<ul> <li>\$7-1200 station 1</li> </ul>	<search></search>	1
Add new device						> PLC 1		
Devices & networks		PLC_1 (PU12110	FBPN 1616P.TS			▼ GSD device_1	Filter Prohie:	
PLC_1 [CPU 1211C DC/DC/DC]		cionane a				FBPN	Distributed I/O	
Device configuration			100_1		•		Power supply & distribution	
😼 Online & diagnostics					7		Field devices	
Program blocks		PLC 1	PROFINET IO-Syste		-		Other field devices	
Technology objects			and a second second second				Additional Ethernet devices	
External source files							PROFINETIO	
PLC tags							Drives	
PLC data types							Encoders	
Watch and force tables					~		🕨 🧾 Gateway	
Online backups		4 11		3 100%		2 11 3	<b>▼</b> []] I/O	
🕨 🔄 Traces							The second secon	
Device proxy data		PROFINET IO-System [IO-s	vstemj	S Properties	Info D	liagnostics	BLOCK20	
Program info		General IO tags	System constants Texts				Compact IP67 IO	
PLC alarm text lists		Ceneral	-				Compact Slim Analog	
Local modules		Hardware identifier	General				EP Device	
Distributed I/O		Considerender Identitater					🕶 🥅 FBPN	

- 8.1.2.6. Modify the FB20 module device name and IP address settings.
- Click on the FB20 module in the "Network View", select "Properties -->PROFINET Interface -->Ethernet Address", set the FB20 module device name FBPN and IP address in the window. (It should be in the same network segment as the IP address of the PLC).



2) Select FBPN-1616P-TS, right-click on the menu and choose "Assign Device Name". In the Profinet Device Name Assignment interface, click "Update List". The name and MAC address of the connected FB20 module will be scanned. Select the device with the matching MAC address and click "Assign Name"



Project tree		FB20 test 🕨 Devices & networks	_ ₽ ■ X Hardware catalog ₽ □
Devices			Topology view 🚮 Network view 👔 Device view Options
1	1	Network Connections HM connection	💌 🛺 Relations 🕎 📆 🛄 🔍 ± 📑 📑 Network overview ( )
			# IO system: PLC_1.PROFINET IO-System (100)
Paco test     Pacotest		PLC_1 OV 1211C PDN-1616ATS PLC_1 PRC_1.PROFINETIO-Syste	Change device on further to Moro Memory Card     Start device tool.     Construction     Change device     Construction     Change device     Construction     Change device     Construction     Constructio
<ul> <li>Image: Second sec</li></ul>			Assign to new DP master 1/D controller Disconcect from DP master system 1/D system Highlight DP master system 1/D system
Local modules     Local modules     Local modules     Local modules     Local module	~		Compile Control Part of the Christian Christia
Name		4	Colline & display forced operands     Coll-Shift-C     Show cealsing     Coll-Shift-C     Coll-Shift-C
		FBPN [FBPN-1616P-TS]	Feport module labeling strips     Properties     Alt+Enter     Alt+Enter     Alt+Enter     Alt+Enter

8.1.2.7. In the "Device Overview", you can view the I/O address occupancy of the configured modules. In this example, the module input addresses IB1-IB2 and output addresses QB1-QB2 can be modified as needed.



8.1.2.8. Selecting module "1616\_1" -->"Properties" -->"Module Parameters" allows for corresponding parameter settings, with slight differences in configurable parameters for different models.

Project Edit View Insert Online Options	Tools Window Help						Totally Integrated Au	atomation
🕒 🕒 🛃 Save project 📑 🐰 🗄 间 🗙 🕷	) ± (* 4 원 🛛 🖓 🖉 🖉	Go online 🖉 Go offline 🛔 🖪	😵 🗄 🔟 < earch in project>	-14				PORTAL
Project tree	FB20 test > Ungrouped device	es  FBPN [FBPN-1616P-TS]				_ # = ×	Hardware catalog	
Devices			🛃 Topology view	& Network	view 👔 D	evice view	Options	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	FBPN [FBPN-1616P-TS]	- = = 4	Device overview					
st l		~	V) Madula	Pack files	Ladders 0	ddara Tana	✓ Catalog	dwa
🖉 💌 📑 FB20 test 📃 🔿	FBEN	=	FRPN	0 0	Taudress Q	ERPN.	Search	- 1 AL EAL
Add new device			PNHO	0 0 ×1		FRPN		
🔒 📩 Devices & networks			16162 1	0 1	1.2 1	2 1616P	Filter Profile: Alb	
PLC_1 [CPU 1211C DC/DC/DC]	_			0 2			<ul> <li>Head module</li> </ul>	9
Device configuration				0 3			FBPN-1616P-TS	
🔍 Online & diagnostics 👘	-		1				▼ <u>I</u> Module	8
Program blocks	-						Diagnostic Modules	9
Technology objects							Channel Diagnosis	5
External source files							Power supply status	10
PLC tags		~						0
PLC data types	< III > 100%	· · · · · · · · · · · · · · · · · · ·	<			>	1	
Watch and force tables	1616P 1 [1616P]		Droportion	t lefe (D)	Disquestics		1	-
Online backups			Sperces	Tanno o D	Diagnostics		4	4
Traces	General IO tags Sy	stem constants Texts						ast
Device proxy data	✓ General							5
Program info	Catalog information	Module parameters					1	
PLC alarm text lists	Hardware interrupts	Eliter Cotting						<u> </u>
Local modules	<ul> <li>Module parameters</li> </ul>	riter setting						ibr
Distributed I/O	Filter Setting	Filter Setting						21.
Ungrouped devices	Module failure 🔿							S.
Security settings	I/O addresses	Filter Setting:	medium					
✓ Details view			extremely weak			- E		
		Module failure	weak					_
	1		strong					
- 10			extremely strong					
Name			inputs.	u cannot evaluate t	ne value status	orme		
		Input values with module						
		failure:	Input value 0					
		L					4	
		< =				>	> Information	
Portal view     Overview	📥 FBPN						Project EB20 test created	

1) Filter time setting:



The filtering time can be classified into five levels from short to long: extremely weak, week, medium, strong, extremely strong, and the default is medium.

The stronger the filtering, the higher the probability of filtering out the input interference signal, but the corresponding input response time will also be longer. You can choose from the drop-down menu according to your actual needs.

2) Module failure:

This option is the default setting, and when the module experiences a network failure or other faults, the input maintains the state of the last network cycle.

8.1.2.9. Diagnostic bytes configuration

In the second and third slots of the module, you can choose to add the module's channel diagnostic byte and power diagnostic byte. Please refer to the previous "Process Data Diagnostic Bit Description" for the definition of diagnostic bytes.



8.1.2.10. Parameter settings are complete, save and compile, and download the configured configuration to the PLC to complete the configuration.

M Siemens - C:\Users\Administrator\Desktop	FB20 test/FB2	0 test			/						
Project Edit View Insert Online Option	s Tools Win	dow Help		i de la companya de la						Totally Integrated A	utomation
🕒 📑 🔚 Save project 🚢 🐰 🛅 🗊 🗙 🕛	ີງ ± (≃ ± 👼	🗈 🖸 🖫 📬 🎽	Go online 🖉 🛛	o offline 🛛 🛃 🖪	× 🗆 🗆	Search in p	project>				PORTAL
Project tree 🛛 🕯	FB20 test	Extended download	to device					×	∎×	Hardware catalog	■ □ ►
Devices			Configured	access nodes of "PLC_1"					w	Options	
B	H FBPN		Device	Device type	Slot	Interface	type Address	Subnet			
			PLC_1	CPU 1211C	DC/D 1 X1	PN/IE	192.168.0.1	PN/IE_1		Y Catalon	
▼ FB20 test	· .								ype pph.	- Catalog	
Add new device									RPN	General	
📥 Devices & networks									616P	Filter Profile: All>	- ei
PLC_1 [CPU 1211C DC/DC/DC]									bann	<ul> <li>Head module</li> </ul>	
Device configuration				Type of the PG	PC interface:	PN/IE		-	ower	FBPN-1616P-TS	
Solution Continue & diagnostics	1 1			PG	PC interface:	Intel(R)	Ethernet Connection (4) 121	9-LM 💌 🐑 🔍		▼ [ Module	
Program blocks				Connection to inte	dare/subnet:	PM/F 1				Diagnostic Modules	
Technology objects				connection to inte	incerscorrec.					Channel Diagnosis	
External source files										Power supply status	
PLC tags									-		
Le PLC data types	<		Select targ	et device:			Show all compatible	devices 💌	>		
Opling backups	Power sup		Device	Device tvp	e lote	dace type	Address	Target device			
Traces	General		-	-	PN/	E	Access address	-			
Device proxy data	General								-		
Program info	Catalo										
PLC alarm text lists	Hardware	_									
Local modules	- Module p								-		
Distributed I/O	Module	Flash LED									
Ungrouped devices	I/O addre:										
Security settings	<							Start search			
✓ Details view											
		Online status information	tion:				Display only error i	messages			
										-	
Name	1 1										
								_			
							Load	Gancel			
	1 1				_	_					
										> Information	
		_	<						,	> Information	_
Portal view     Overview	📩 FBPN								<b></b>	Project FB20 test created.	



If all configurations are correct, the indicator lights of the FB20 coupler will display green, and the communication MD indicator light will display green and remain on.

## 8.2. Configuration and test in Omron Sysmac Studio

#### 8.2.1. IP Address Settings

The FB20 Ethernet/IP series defaults to no IP address at the factory, and users can set the correct IP address themselves through a third-party IP configuration tool. In this manual, the "IP Setting Tool" software is used to set the module IP address.

The IP setting steps are as follows:

- 8.2.1.1. Connect the FBEI module to the power supply and Ethernet cable according to the wiring instructions;
- 8.2.1.2. After correctly installing " IP Setting Tool " on the PC according to the installation wizard, open the software and set the computer IP address to the same network segment address as the IP to be set by FBEI; In this example, the PC IP is set to 192.168.250.100;
- 8.2.1.3. Open the " IP Setting Tool " software interface, click the "Scan Ethernet/IP device" button, or wait for a few seconds, if the connection is normal, the software will display all scan results of the computer connection based on the module's MAC on the interface:

🔄 IP S	Setting Tool					—		$\times$
File(F)	Communication(C)	Setup(S)	Language(L)	Help(H)				
State @	MAC addr. 8C:19:2D:51:5D:23	Dunknown	evice name	IP addr. Not set	Next power on 🔻	IP :	tup addr.([)	
						dev Sca	an EtherN vices( <u>A</u> )	et/IP
<					>			
Dis	play detailed informati	on(D)					Exit(X)	

8.2.1.4. Click on the module you want to set, click on "Setup IP asddr..." button, enter the IP address you want to set in the pop-up dialog box and click OK to confirm.



IP Setting Tool	Setup IP addr.	×	) –
File(F) Communication	Please set the IP address.		
State NIAC addi.           Image: State NiAC a	MAC addr. 8C:19:2D:51:5D:23		IP addr.([)
	Device name 1 unknown		Scan EtherNet/IP devices(A)
	IP addr. (required)(I) 192 . 168 . 250 . 10	]	
	Host name (optional)(H)		
	IP addr. setting at next power on(N)		
<ul> <li>✓ Display detailed inform</li> </ul>	Search available IP addresses(F) OK Cancel		Exit(X)

8.2.1.5. Pop up successful IP setting dialog box.

ii oottiii	, ion	
(	IP address setup succeeded. If the IP address setup of next power on is not set to "Fixed IP start-up", the IP address will be initialized when power down. When setting EtherNet/IP devices, please re-open the IP address setup dialog, and change the IP address setup to "Fixed IP start-up" if necessary.	

Click again to select the FBEI module with the IP address already set, click on "Setup IP addr...", Select 'start fixed IP' from the "IP addr. setting at next power on" dialog box and click OK.

IP Setting Tool	Setup IP addr.	×	٦	_		$\times$
File(F) Communication	Please set the IP address.		F	_		
8C:19:2D:51:5D	MAC addr.	8C:19:2D:51:5D:23	60	IP ad	p  dr.([)	
	Device name	FBEI-1616UP-TS(EtherNet/IP)	*	Scan devic	EtherNe es(A)	t/IP
	IP addr. (required)(I)	192 . 168 . 250 . 10	Г			
	Host name (optional)(H)		L			
	IP addr. setting at next power on(N)	Start with fixed IP $\qquad \checkmark$	L			
<						
Display detailed inform	Search available IP address	es(F) OK Cancel		E	Exit(X)	

At this point, the IP address of the FBEI module has been successfully fixed in the module.

#### 8.2.2. Configuration Example in Omron Sysmac studio



In this example, ELCO's FBEI-1616UP-TS is used as the Ethernet/IP slave station to connect to the Omron Ethernet/IP controller NJ301-1100. By default, all power supply and bus connections have been correctly completed.

8.2.2.1. Open the Sysmac Studio software, click on "New Project", fill in the corresponding information according to the PLC model, and click on "Create".



8.2.2.2. Set the IP address for the built-in EtherNet/IP port of the PLC. In this example, the default IP address for the PLC is 192.168.250.1, and the corresponding IP address for the FBEI module is 192.168.250.10. Note that the PLC and module should be set to the same network segment. The IP setting method for the module can refer to 9.2.1. IP Address Settings.



8.2.2.3. Set up the Ethernet/IP network by selecting "Tools>Ethernet/IP Connection Settings" from the menu bar.



#### 8.2.2.4. Double click or right-click to edit the built-in Ethernet/IP port

FBEI test - new_Controller_0 - Sysmac Stud	dio (32bit)				-	o ×
File Edit View Insert Project Contro	aller Simulation	Tools Window Help				
X ២ ោ ២ ១ ៤ ៧ គី	人影员四	Event Log Viewer	C I Q Q Z			
Multiview Explorer 🗸 🎈	👸 Built-in EtherN	EtherCAT Diagnosis/Statistics Information Viewer		•	Toolbox	- 0
new_Controller_0 V	TER	Backup			<search></search>	
Configurations and Setup     SthereAT		Comments for Variables and Data Types (For switching)				
CPU/Expansion Racks		Import ST Program		1		
		IEC 61131-10 XML Import Motor sizing tool Results				
L T. Operation Settings		Update Configurations and Setup Transfer Data				
Built-in EtherNet/IP Port Settings	FIP 8	EtherNet/IP Connection Settings	2			
e' Cam Data Settings		Launch External Application				
Event Settings     Tark Settings	ΠΤΡ	Customize Shortcut Keys Option				
Data Trace Settings		Secondary DNS server				
Programming     A POLIS		Host Name - IP Address				
v (r Programs		Host Name I IP Address	1			
▼ ⊟ Program0						
LE Functions						
LII Function Blocks						
▶ fn Tasks				Reset all to default.		
	Build			- # ×		
		Description   Program   Location				
<	Output Build					
1 Fater	Output Duit					
FBEI test - new_Controller_0 - Sysmac Stud	dio (32bit)	- I Malana II.				X
File Edit View insert Project Control						
	▲ 88 100 100		22 <u>4444</u>			
Multiview Explorer 🗸 🖗	Built-in EtherNe	It/IP Port S EtherNet/IP Device List ×	Description		Toolbox	
new_Controller_0	192.168.2	50.1 Built-in EtherNet/IP Port Settings N	1301-1100		< Search >	کا کا ک
Configurations and Setup     EtherCAT		Monitor				
CPU/Expansion Racks						
▼ It Controller Setup						
Operation Settings						
O Motion Control Setup						
e' Cam Data Settings						
<ul> <li>Event Settings</li> <li>Task Settings</li> </ul>						
FBEI test - new_Controller_0 - Sysmac Stud	dio (32bit)				-	• ×
File Edit View Insert Project Contro	oller Simulation	Tools Window Help				
វតាធាយ១៤ថា ៩	人影员团	# # Ø R A & & & * * * 0	A P O A A			
Multiview Explorer 🔍 🗸 🎙	Built-in EtherNe	et/IP Port S EtherNet/IP Device List Built-in EtherNet/IPec	tion Se ×		Toolbox	- Q
new_Controller_0		Tag Set			Target Device	
Configurations and Setup						
EtherCAT     ETHERCAT     ETHERCAT     ETHERCAT		Device Information Tag Sets				
# VO Map		Tag Sets/Max: 0 / 32 Tags/Max: 0 / 256	Regis	tration All Import Export		
It Controller Setup      LIII: Operation Settings	Ing	out Output				
Built-in EtherNet/IP Port Settings		I Tag Set Name   Bit Selection   Size (	Byte)   Size (Bit)   Instance ID   Controll	er Status i		
► Event Settings					Variable Name	Size [Byte]
Task Settings     Task Settings     Take Settings						
Programming						
V @ POUs						
V ⊟ Program0						
L & Section0				Return All to Default		
L 派 Function Blocks		Pester		Tetori Airio Octobre		
🖉 🍉 🖿 Data			Transfer to Controller	nsfer from Controller Compare		

settings of the PLC in the newly opened interface to open the connection settings interface.

8.2.2.5. Install the EDS file for FBEI, which is in. eds format and is used to integrate FBEI as a standard Ethernet/IP slave into your system. Right click on the toolbox on the right side of the connection settings and select 'Show EDS Library'



FBEI test - new_Controller_0 - Sysmac Studio	o (32bit)					- 0	×
File Edit View Insert Project Controlle	er Simulatir	on Tools Window Help					
	< ¥ 🖾		A X 63 64 %	O P P I Q Q R			
Multiview Explorer 🗸 🌵	Built-in Eth	herNet/IP Port S EtherNet	IP Device List Built-in EtherNe	t/IPection Se ×		Toolbox	<b>.</b> Q
new_Controller_0	0-	<b>∏⊷</b> Tag Set				Target Device	
S EtherCAT      S CPU/Expansion Racks      J/O Map	¤-€8	Device Information     Tag Sets     Tag Sets     Tag Sets	Transferations 0 / 256		Desistration All Instant For	Add Connection Edit	
		Ing Sets/Mac 0 7 32	lags/Max: 0 / 236	Sita (Buta) i Sita (Bit) i Instanca ID	Registration All Import EX	Display EDS Library	
Gam Data Settings		I lay set route	1 bit selection 1	Size (byte)   Size (on)   instance to			
Com Data Seconds      Fevent Settings      Task Settings						Variable Name   Size [Byte	2]
Data Trace Settings     Programming							
▼ @ POUs ▼ @ Programs							
		Restart			Return All to De	fault	

8.2.2.6. Click "Install", find the path where the EDS file of the FBEI module is stored, click the "Open" button, and the configuration file will be successfully imported.

📓 EDS Library		- 🗆 🗙				EDS Library	- 🗆 ×
Vendor     OMRON Corp.     Omron Adept     Omron Micros     ELCO Industry	oration Technologies, Inc. can Systems, Inc. Automation AG Install EDS File ← → → → ↑ ↑ <b>■ </b> « IP2	20傾映 > F820系列卧式 > 配置文件	ŧ ~ V	在配置文件中搜索	× م	Vendor OMRON Corporation Omron Adept Technologies, Inc. Omron Microscan Systems, Inc. ELCO Industry Automation AG Communications Adapter FBEI-0032N-TS FBEI-0032P-TS FBEI-1616N-TS	
	组织 • 新建文件夹			E.	. 0	FBEI-1616P-TS	
	<ul> <li>⇒ 此也結</li> <li>→ 3D 対象</li> <li>■ 視频</li> <li>■ 限片</li> <li>● 下戦</li> <li>→ 百乐</li> <li>■ 週週</li> <li>些 OS (C)</li> <li>⇒ Softwares (D)</li> <li>⊂ Work (E)</li> </ul>	EIR            IF BEL-0032N-TS-VI.03         IF BEL-0032P-TS-VI.03           IF BEL-1616N-TS-VI.03         IF BEL-1616N-TS-VI.03           IF BEL-1616N-TS-VI.03         IF BEL-1616N-TS-VI.03           IF BEL-1616N-TS-VI.03         IF BEL-1616N-TS-VI.03           IF BEL-1616N-TS-VI.03         IF BEL-1616N-TS-VI.03           IF BEL-1616N-TS-VI.03         IF BEL-1616N-TS-VI.03	様式日期 2024/5/14 15:02 2024/5/14 15:05 2024/5/14 15:06 2024/5/14 15:06 2024/5/14 15:07 2024/5/14 15:07	樊型 EDS 文件 EDS 文件 EDS 文件 EDS 文件 EDS 文件 EDS 文件	大小 6 6 7 7 14 7 7	HBEI-3200N-15 HBEI-3200P-15 FX20-GW-EP00	
		< 名(N): FBEI-1616UP-TS-V1.00	~] 	Electronic Data She 打开(O)	> et(*eds) ~ 取消		
Install	Close					Install	

8.2.2.7. Click to close EDS library, click the "+" button in the toolbox, fill in the IP address of the module to be configured in the pop-up window (in this example, 192.168.250.10), select the FBEI model FBEI-1616UP-TS in the model's name, and choose the latest revision version. After completion, click the "Add" button.





8.2.2.8. Right click on the newly created target device 192.168.250.10 FBEI-1616UP-TS version 1 to edit.

📓 FBEI test - new_Controller_0 - Sysmac Studio (32bit)	- 🗆 ×
File Edit View Insert Project Controller Simulation Tools Window Help	
※審察員びつき間 御大旅母司後王母 東大家の今年前のお兄 耳りのが	
Multiview Explorer 🔹 🗸 🐉 Bulton Etherhet/IP Ports. Etherhet/IP Device List 📴 Bulton Etherhet/IP-leader San 🗴 🚺	oolbox 🚽 🎝
Controlet      C	arret Device

8.2.2.9. In this parameter setting interface, you can select the filtering time and input/output properties of 16 configurable channels. It is recommended to use the default setting of I/O Universal, but you can also customize the input or output properties of each channel as needed.

FBEI test - new_Controller_0 - Sysmac Studio (32bit)		- 🗆 X
File Edit View Insert Project Controller Simulation Tools Window Help		
Multiview Explorer 👘 🕫 Built-in EtherNet/IP Port S EtherNet/IP Device List Built-in EtherNet/IP.ection Se 🗙	Toolbox	- Q
new_Controller_0 V Tag Soft	P address 192 . 168 . 250 .	_10
	▼ Parameters	
× Computeroids and 200µ	Parameter Name	Value II
b) CPUK marring Parks	<ul> <li>All parameters</li> </ul>	
■ a cru/s paravir ratus ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	0001 Filter Setting	weak 🔻
Tag Sets/Max: 0 / 32 Tags/Max: 0 / 256 Registration All Import Export	0004 Channel 17	I/O Universal
▼ II, Controller Setup	0005 Channel 18	1/O Universal
LID: Operation Settings	0007 Channel 20	I/O Universal
Built-in EtherNet/IP Port	0008 Channel 21	I/O Universal
▶ @ Motion Control Setup	0009 Channel 22	I/O Universal 🔻
er Cam Data Settings	0010 Channel 23	I/O Universal 🔹
➤ Event Settings	0011 Channel 24	I/O Universal 🔹
In, Task Settings	0012 Channel 25	I/O Universal 🔹
20 Data Trace Settinos	0013 Channel 26	I/O Universal
	0014 Channel 27	I/O Universal
· Programming	0015 Channel 28	I/O Universal
	0017 Channel 30	I/O Universal
V (# Programs	0018 Channel 31	I/O Universal
¥ 🗄 Program0	0019 Channel 32	I/O Universal
L & Section0		
Lig Functions Restart Return All to Default		
L (# Function Blocks		
Enanster to Controller Compare		
► m Tasks		
Build		
Surfaces (Strategy Strategy St		
I Description Program Location I	Help	
	0001 Filter Setting	
	Delault - weak	
	Return All to Default	
f Filter 🕑 Output Build	ОК	Cancel

Click OK to exit channel parameter configuration.

8.2.2.10. Create data type: Double click on the left navigation bar "Programming ->Data ->Data type", double-click on the "Empty .Click here to add item".



BEI fest - new_Controller_0 - Sysmac Studio (32bit)	-	□ ×
File Edit View Insert Project Controller Simulation Tools Window Help		
米●督告ひら聞 古人状気目並其目 女 女 父の女子 手のひいい 耳ののよ		
Multivitev Explorer       Image: Controller_O       Image: Controler_O       Image: Controler_O <td>Toobor Ser(h&gt;</td> <td></td>	Toobor Ser(h>	
E Filter 🕑 Coutput Build		

8.2.2.11. For the sake of intuition, two data types are established here:
input and output, and members "FBEI-DI" (used for input mapping), and
"FBEI-DO" (used for output mapping) are added by right clicking on the newly established two data types.

FBEI test - new_Controller_0 - Sysma	ac Studio (32bit)		- U X
File Edit View Insert Project O	Controller Simulation Tools Win	ndow Help	
X側陥亡ちぐ図	山大家同园游工		
Multiview Explorer 🗸 🖣 Ethe	erNet/IP Device List Built-in EtherNet/	/IPection Se 🔂 Data Types 🗙	÷ 4
new Controller 0 🔻	root	Search>	▼ P X
Configurations and Sature	ructures   Name	Base Type   Offset Byte   Offset Bit   Co	
212 EtherCAT	iumerated	Create Nu Data Type	
CPU/Expansion Racks		Create New Member	
⇒ I/O Map		Cut	
▼		Сору	
L □ Operation Settings		Paste	
∟# Built-in EtherNet/IP Po		Delete	
Motion Control Setup		Undo	
Event Settings		Redo	
m Task Settings		Update Offset	
Data Trace Settings		Select All	
Programming		Collapse All	
► @ POUs		Expand All	
And the Date			

Based on the length of input-output mapping data occupied by FBEI-1616UP-TS, establish corresponding basic types. Short, overload, and power are diagnostic data for module short circuit, overload, and power supply faults, respectively, as shown in the figure:

(The appendix of the manual lists the I/O mapping for all models for reference.)

EtherNet/IP D	evic	e List Built-in EtherNet/IPection S	e 📴 Data Types 🗙				-
root							•
Structures		Name	Base Type	I Offset Type	Offset Byte	I Offset Bit	Co
Union	▼	input	STRUCT	NJ			
Enumerated		FBEI_DI	ARRAY[031] OF bool				
		short	ARRAY[031] OF bool				
		overload	ARRAY[015] OF bool				
		power	ARRAY[015] OF bool				
	V	output	STRUCT	NJ			
		FBEI_DO	ARRAY[015] OF bool				

Note that the delimiter is an underscore "\_" instead of a dash "-".

8.2.2.12. Create global variables: Double click the "Global Variables" menu on the left to create two global variables, input1 and output1. Fill in the data type names "INPUT" and "OUTPUT", and associate them with the



structure "Input" and "Output" through the drop-down menu of the "Network Publish" option.



8.2.2.13. Variable registration: In the "Built in Ethernet/IP Port Settings" tab, click the "Registration All" button in the "Tag sets", confirm in the pop-up dialog box, and click "Register".

ep <sup>e</sup> Built-i	n EtherNet/IP Port S Ethe	erNet/IP Device List	Built-in EtherNet/IPection Se	🗙 🗖 Data Types	🖬 Global Variables	-
0+	■ Tag Set					
	Device Information					
n.f.B	▼ Tag Sets					
- LQ	Tag Sets/Max: 0 /	32 Tags/Max: 0	/ 256		Registration All	Import Export
	Input Output					
	I Tag Set	Name i	Bit Selection   Size (Byte)	Size (Bit)	Instance ID   Contro	ller Status
	Restart					Return All to Default
	TROSCHI C					Incluit Air to belluit
				Transfer to Co	ntroller Transfer from	Controller Compare
Tag	Set Registration Setting					- 🗆 X
Select th	e variables to set.				1	
Select th	e variables to set. Variable Name	;	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag		Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag input1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag input1 ▼Output Tag		Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag input1 ▼Output Tag output1	e INPUT OUTP	Data Type -	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag input1 ▼Output Tag output1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼Input Tag input1 ▼Output Tag output1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e Input	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e Input	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e Input	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type UT	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	e INPUT	Data Type	Size		Comment
Select th	e variables to set. Variable Name ▼ Input Tag input1 ▼ Output Tag output1	Selected Items	Data Type	Size		Comment

Tianjin Elco Automation Co.,Ltd



8.2.2.14. In the "Connection" settings, click the "+" and select to fill in the relevant parameters such as "Target Device", "Input/Output", "Target Variable", "Starting Variable", "Connection Type", etc., which should be consistent with the previously established global variables.

E Built-in Et	herNet/IP Port S Ether	Net/IP Device Li	st Built-in Et	herNet/IPe	ction Se ×	Data Types	🖭 Global Variab	les			-
	Connection Connections/Max: 0 / 3 Target Device	32  Connection N	aConnection I/C	) Input/Out	Target Variable	Size [Byte]	Originator Variable	+  Size [Byte	]  Connection Ty	RPI [ms] Tim	eout V.
1											
	2										
	+	1									
	Restart								Ret	urn All to De	fault
					Tr	ansfer to Con	troller Transfe	r from Cont	roller	Compare	
EP Built-in Et	herNet/IP Port S Ether	Net/IP Device Li N	st Built-in Et	herNet/IPe	ction Se 🗙 🔁	Data Types	lvari Global Variab	les			•
EIP Built-in Eti	herNet/IP Port S Ether Connection Connection Connections/Max: 2 / 3 Target Device	Net/IP Device Li N 2 Connection N	st Built-in Et	herNet/IPee	ction Se × 💽	Data Types	(Originator Variab	les Size (Byte	Connectic	n Type R	<b>↓</b> .PI [ms]]T]
er Built-in Et	herNet/IP Port S Ether Connection Connections/Max: 2 / 3 Target Device 192.168.250.10 FBEI-1616	Net/IP Device Li	st Built-in Et	linput/Out Output	Target Variable	Data Types Size [Byte] 12 2	IOriginator Variable	Size [Byte 12 2	1 Connectic Point to Point o Point to Point o	n Type R onnection 5 onnection 1	PI [ms] T i0.0 RF
₽ Buit-in Et	herNet/IP Port S Ether Connection Connections/Max: 2 / 3 Target Device 192.168.250.10 FBEI-1616	Net/IP Device Li	st Built-in Et	Input/Out Output	Target Variable       100       3	Data Types           Size [Byte]           12           2	Med Global Variable IOriginator Variable nput1 output1 4	es Size (Byte 12 2	1 Connectic Point to Point o Point to Point o 5	n Type R onnection S onnection R	PI [ms] T i0.0 RF
Buit-in Et	herNet/IP Port S Ether	Net/IP Device Li	st Built-in Et	herNet/IPe Input/Out Input Output 2	Target Variable 101 100 3	Data Types Size (Byte) 12 2	ver Global Variab Originator Variable input1 output1 4	Size (Byte 12 2	Connectic Point to Point o Point to Point o 5	n Type R onnection 2 onnection	PI [ms]IT 50.0 RF
Built-in Eti	herNet/IP Port S Ether Connection Connections/Max: 2 / 3 Target Device 192.168.250.10 FBEI-1616 1 Levice Bandwidth	Net/IP Device Li	st Built-in Et	Input/Out Input Output 2	Ction Se X 💽 Target Variable 101 100 3	Data Types Size (Byte) 12 2	e Global Variab IOriginator Variable nput1 output1 ↓	Size (Byte 12 2	1 Connection Point to Point of Point to Point of 5	n Type R onnection S onnection	PI [ms]11 50.0 RF
Buit-in Et	herNet/IP Port S Ether Connection Connections/Max: 2 / 3 Target Device 192.168.250.10 FBEI-1616 1 Device Bandwidth Restart	Net/IP Device Li	st Built-in Et	Input/Out Input Output	Ction Se X 💽	Data Types	E Global Variable	les Size (Byte 12 2	Connection Point to Point of Point to Point of S	n Type R onnection S onnection d	PI [ms]]T io.0 RF ×

Note: If you want to change the above parameter configuration, you need to delete the connection and then add the connection configuration again for it to take effect.

- 8.2.2.15. At this point, the FBEI module has been configured through Ethernet/IP bus connection in Omron Sysmac Studio, and the parameter configuration is transmitted to the PLC. If the configuration is correct, the relevant indicator light BF of the FBEI module will remain green and can be used for input and output signal testing.
- 8.2.2.16. Input/Output Test

1)Open menu: view->watch tab page, enter variable names input1 and output1:



Toti test	- new_controller_0 - sysmac studio (320	ut)									- 0 ^
File Edit	View Insert Project Controller S	imulation Tool	s Window H	ielp							
X 🖷	Multiview Explorer Toolbox	Alt+1 Alt+2	A 🙂 🕴	R 🗛 🖄 68 4	° ∿ °⊨ O °	A P I Q C	2 12				
Multiview I	Output Tab Page	Alt+3	erNet/IPection	1 Se T Data Types	Global Variables	🗙 🧬 I/O Map			- 1	oolbox	- Q
now Contr	Watch Tab Page	Alt+4	ta Type	Initial Value AT	Retain Con	stant Network Publish	Comment			<search></search>	<b>V</b>
new_conu	Watch Tab Page(Table)	Alt+Shift+4	-9po			Input	v		_		
Configur	Cross Reference Tab Page	Alt+5				Output	<b>v</b>				
20 E	Build Tab Page	Alt+6									
► 63 C	Search and Replace Results Tab Page	Alt+7									
	Simulation Pane	Alt+8									
1.0	Differential Monitor	Alt+9									
	Variable Table	Ctrl+Shift+V									
	Variable Manager		-								
6' C	Smart Project Search	Ctrl+Shift+F									
	Recently Closed Windows	Ctrl+Shift+H									
■ <b>•</b> 5 Ti	Clear Recently Closed Windows Histor	У									
RI D	Zoom	•									
Program	Reset Window Lavout										
	ata		-						• 4 ×		
1.5	Device name Data Types		Name	Online value	Modify	Comment I	Data type	AI	Display		
10 L.H	Global Variables		#1				autrout.				
▼ the Ta	isks new Controller	langua	Name				- and				
	PrimaryTask										

2) By sequentially forcing the output channels to "Ture", 16 output channel indicator lights can be lit. Similarly, by inputting a high-level signal, the input channel can be monitored to become "Ture".

Watch (Project)1					
Device name	Name	Online value	Modify	Comment	Data type
new_Controller_0	▶ input1				input
new_Controller_0	▼ output1				output
	▼ FBEI_DO[0-15]				
	FBEI_DO[0]	True	TRUE FALSE		bool
	FBEI_DO[1]	True	TRUE FALSE		bool
	FBEI_DO[2]	True	TRUE FALSE		bool
	FBEI_DO[3]	True	TRUE FALSE		bool
	FBEI_DO[4]	True	TRUE FALSE		bool
	FBEI_DO[5]	True	TRUE FALSE		bool
	FBEI_DO[6]	True	TRUE FALSE		bool
	FBEI_DO[7]	True	TRUE FALSE		bool
	FBEI_DO[8]	True	TRUE FALSE		bool
	FBEI_DO[9]	True	TRUE FALSE		bool
	FBEI_DO[10]	True	TRUE FALSE		bool
	FBEI_DO[11]	True	TRUE FALSE		bool
	FBEI_DO[12]	True	TRUE FALSE		bool
	FBEI_DO[13]	True	TRUE FALSE		bool
	FBEI_DO[14]	True	TRUE FALSE		bool
	FBEI_DO[15]	True	TRUE FALSE		bool



FB20 series IP20 wide form I/O modules concise operation manual 9. Fault diagnosis LEDs

Name	Status	Meaning	Handling suggestions
FB20 LED inc	licators		
	Green	Normal	None
PW	0"	Devier Feilure	Check the power supply voltage and polarity;
	Oli	Power Failure	Module damaged, replace.
	Green	Normal	None
BF	Red	Bus Failure	Configuration error, check parameters configuration
			Bus connection error, check the bus cable connection
	Green	Normal	None
SF	Pad	Modulo Eciluro	Check if there is a short circuit or overload in any I/O channel;
	Reu		Check if the power supply voltage is within the range of 24 VDC ± 20%;
1-32 I/O	Off	Channel low level	None
LEDS	On	Channel high level	None
	Green LED off	No network	Check the network cable connection of the network port X1
	Green LED on	network connected	None
X1	Yellow LED Blinking	Network Port 1 is sending/receiving Data	None
	Yellow LED off	Network Port 1 has no data exchange	None
	Green LED off	No network	Check the network cable connection of the network port X2
	Green LED on	network connected	None
X2	Yellow LED Blinking	Network Port 2 is sending/receiving Data	None
	Yellow LED off	Network Port 2 has no data exchange	None



## Appendix

## 1. FB20 series Profinet data structure

#### ■ FBPN-3200P(N)-TS

#### 1) Process Data Input

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
	Byte 0	i8	i7	i6	i5	i4	i3	i2	i1	
Slot 1	Byte 1	i16	i15	i14	i13	i12	i11	i10	i9	Input data
5101 1	Byte 2	i24	i23	i22	i21	i20	i19	i18	i17	input data
	Byte 3	i32	i31	i30	i29	i28	i27	i26	i25	
	Byte 4	Diag.8	Diag.7	Diag.6	Diag.5	Diag.4	Diag.3	Diag.2	Diag.1	
Slot 2	Byte 5	Diag.16	Diag.15	Diag.14	Diag.13	Diag.12	Diag.11	Diag.10	Diag.9	Channel
5101 2	Byte 6	Diag.24	Diag.23	Diag.22	Diag.21	Diag.20	Diag.19	Diag.18	Diag.17	Diagnosis
	Byte 7	Diag.32	Diag.31	Diag.30	Diag.29	Diag.28	Diag.27	Diag.26	Diag.25	
Slot 3	Byte 8								Error	Power status

#### 2) Config

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
										0: extremely weak
										1: weak
Byte 0				Filter	Setting				2	2: medium
										3: strong
										4: extremely strong

#### ■ FBPN-1616P(N)-TS

#### 1) Process Data Input

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Slot 1	Byte 0	i8	i7	i6	i5	i4	i3	i2	i1	Input data
5101 1	Byte 1	i16	i15	i14	i13	i12	i11	i10	i9	input data
	Byte 2	Diag.8	Diag.7	Diag.6	Diag.5	Diag.4	Diag.3	Diag.2	Diag.1	
Slot 2	Byte 3	Diag.16	Diag.15	Diag.14	Diag.13	Diag.12	Diag.11	Diag.10	Diag.9	Channel
3101 2	Byte 4	Diag.24	Diag.23	Diag.22	Diag.21	Diag.20	Diag.19	Diag.18	Diag.17	Diagnosis
	Byte 5	Diag.32	Diag.31	Diag.30	Diag.29	Diag.28	Diag.27	Diag.26	Diag.25	
slot3	Byte 6								Error	Power status



#### 2) Process Data Output

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Slot 1	Byte 0	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	Output data
5101 1	Byte 1	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

#### 3) Config

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
Byte 0				Filter	Setting				2	0: extremely weak 1: weak 2: medium 3: strong 4: oxtremely strong
										3: stror 4: extre

#### ■ FBPN-0032P(N)-TS

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
	Byte 0	Diag.8	Diag.7	Diag.6	Diag.5	Diag.4	Diag.3	Diag.2	Diag.1	
Slat 2	Byte 1	Diag.16	Diag.15	Diag.14	Diag.13	Diag.12	Diag.11	Diag.10	Diag.9	Channel
5101 2	Byte 2	Diag.24	Diag.23	Diag.22	Diag.21	Diag.20	Diag.19	Diag.18	Diag.17	Diagnosis
	Byte 3	Diag.32	Diag.31	Diag.30	Diag.29	Diag.28	Diag.27	Diag.26	Diag.25	
Slot 3	Byte 4								Error	Power status

#### 1) Process Data Input

#### 2) Process Data Output

	/		-							
		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
	Byte 0	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	
Slot 1	Byte 1	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9	Output data
5101 1	Byte 2	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	
	Byte 3	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

#### ■ FBPN-1616UP(N)-TS

#### 1) Process Data Input

		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
	Byte 0	18	17	16	15	14	13	12	l1	
Slot 1	Byte 1	I16	I15	114	113	l12	l11	I10	19	Input data
3101 1	Byte 2	124	123	122	l21	120	l19	I18	117	Input data
	Byte 3	132	131	130	129	128	127	126	125	
	Byte 4	Diag.8	Diag.7	Diag.6	Diag.5	Diag.4	Diag.3	Diag.2	Diag.1	
Slot 2	Byte 5	Diag.16	Diag.15	Diag.14	Diag.13	Diag.12	Diag.11	Diag.10	Diag.9	Channel
3101 2	Byte 6	Diag.24	Diag.23	Diag.22	Diag.21	Diag.20	Diag.19	Diag.18	Diag.17	Diagnosis
	Byte 7	Diag.32	Diag.31	Diag.30	Diag.29	Diag.28	Diag.27	Diag.26	Diag.25	
Slot 3	Byte 8								Error	Power status



|--|

/									
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	Output data
Byte 1	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	
43	<b>~</b> "								

4) Config

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
Byte 0				Filter	Setting				2	0: extremely weak 1: weak 2: medium 3: strong 4: extremely strong
Byte 1			Po							
Byte 2			Po							
Byte 3			Po	ort Type	Channe	19				
Byte 4			Po	ort Type	Channe	1 20				
Byte 5			Po							
Byte 6			Po	ort Type	Channe	1 22				0: Digital Input
Byte 7			Po	ort Type	Channe	1 23				
Byte 8			Po	ort Type	Channe	1 24			2	
Byte 9			Po		3					
Byte 10			Po			5. I/O Oniversal				
Byte 11			Po							
Byte 12			Po							
Byte 13			Po	]						
Byte 14			Po							
Byte 15			Po							
Byte 16			Po	ort Type	Channe	1 32				



## 2. FB20 series Ethernet/IP data structure

#### ■ FBEI-3200P(N)-TS

#### 1) Configuration Data

	Instance ID	Data length
INPUT	101	10
OUTPUT	100	0

#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	i8	i7	i6	i5	i4	i3	i2	i1	
Byte 1	i16	i9	Input data						
Byte 2	i24	inpul dala							
Byte 3	i32								
Byte 4									
Byte 5		Short circuit							
Byte 6		status							
Byte 7									
Byte 8								Error	Power status
Byte 9									Reserved

#### 3) Parameters configuration

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
										0-extremely weak
										3-weak
Byte 0				Filter S	Setting				6	6-medium
						9-strong				
										12-extremely strong
Byte 1									0	Reserved

#### FBEI-1616P-TS

#### 1) Configuration Data

	Instance ID	Data length
INPUT	101	10
OUTPUT	100	2



#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description				
Byte 0	i8	i7	i6	i5	i4	i3	i2	i1	Input data				
Byte 1	i16	i9	input data										
Byte 2													
Byte 3		Short circuit											
Byte 4		status											
Byte 5		S2532											
Byte 6	O24	O24 O23 O22 O21 O20 O19 O18 O17											
Byte 7	O32	O31	O30	O29	O28	O27	O26	O25	status				
Byte 8								Error	Power status				
Byte 9									Reserved				

#### 3) Output Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	Output data
Byte 1	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	Output data

#### 4) Parameters configuration

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
										0-extremely weak
										3-weak
Byte 0				Filter S	Setting				6	6-medium
						9-strong				
										12-extremely strong
Byte 1									0	Reserved

#### ■ FBEI-1616N-TS

#### 1) Configuration Data

	Instance ID	Data length
INPUT	101	10
OUTPUT	100	2

#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description			
Byte 0	i8	Input data										
Byte 1	i16	i16 i15 i14 i13 i12 i11 i10 i9										
Byte 2		Short circuit										
Byte 3		Short circuit										
Byte 4		Status										

Tianjin Elco Automation Co.,Ltd



Byte 5	S25			
Byte 6	O2124	O1720		Overload
Byte 7	O2932	O2528		status
Byte 8			Error	Power status
Byte 9				Reserved

#### 3) Output Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	
Byte 1	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

#### 4) Parameters configuration

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description
										0-extremely weak
										3-weak
Byte 0				Filter S	Setting				6	6-medium
										9-strong
										12-extremely strong
Byte 1									0	Reserved

#### ■ FBEI-1616UP(N)-TS

## 1) Configuration Data

	Instance ID	Data length
INPUT	101	12
OUTPUT	100	2

#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description	
Byte 0	18	17	16	15	14	13	12	l1		
Byte 1	116	l15	114	I13	l12	l11	I10	19	Input data	
Byte 2	124	123	122	l21	120	I19	I18	117	input data	
Byte 3	132	131	130	129	128	127	126	125		
Byte 4		S18								
Byte 5				S9	16				Short circuit	
Byte 6				S17	724				status	
Byte 7				S25	532					
Byte 8	O24	O23	O22	O21	O20	O19	O18	017	Overload	
Byte 9	O32	O31	O30	O29	O28	O27	O26	O25	status	
Byte 10	Error								Power status	
Byte 11										



#### 3) Output Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	Output data
Byte 1	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

#### 4) Parameters configuration

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Default	Description		
					0: extremely weak							
						1: weak						
Byte 0				Filter	1	3: medium						
										5: strong		
										10: extremely strong		
Byte 1			Po	ort Type	Channe	el 17						
Byte 2			Po	ort Type	Channe	el 18						
Byte 3			Po	ort Type	Channe	l 19						
Byte 4			Po	ort Type	Channe	el 20			-			
Byte 5			Po	ort Type	Channe	el 21			-	0: Digital Input		
Byte 6			Po	ort Type	Channe	el 22						
Byte 7			Po	ort Type	Channe	el 23						
Byte 8			Po	ort Type	Channe	el 24						
Byte 9			Po	ort Type	Channe	el 25			3	1. Digital Output		
Byte 10			Po	ort Type	Channe	el 26						
Byte 11			Po	ort Type	Channe	el 27						
Byte 12			Po	ort Type	Channe	el 28						
Byte 13	Port Type Channel 29											
Byte 14	Port Type Channel 30											
Byte 15	Port Type Channel 31											
Byte 16			Po	ort Type	Channe	el 32			1			

#### ■ FBEI-0032P-TS

#### 1) Configuration Data

	Instance ID	Data length
INPUT	101	10
OUTPUT	100	4



#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0									
Byte 1		Short circuit status							
Byte 2				S17	24				Short circuit status
Byte 3									
Byte 4	O8	07	O6	O5	O4	O3	O2	01	
Byte 5	O16	O15	O14	O13	O12	O11	O10	O9	Overland status
Byte 6	O24	O23	O22	O21	O20	O19	O18	017	Overload status
Byte 7	O32	O31	O30	O29	O28	O27	O26	O25	
Byte 8		Power status							
Byte 9									Reserved

### 3) Output Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	
Byte 1	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9	Output data
Byte 2	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	
Byte 3	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

#### ■ FBEI-0032N-TS

#### 1) Configuration Data

	Instance ID	Data length
INPUT	101	10
OUTPUT	100	4

#### 2) Input Process Data

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0									
Byte 1				Chart size uit status					
Byte 2				S17.	24				Short circuit status
Byte 3				S25.	32				
Byte 4		O5	8			01	4		
Byte 5		O13	16			O9.	12		Overland status
Byte 6		O21	24			017	20		Overioau status
Byte 7	O2932 O2528								
Byte 8	Error								Power status
Byte 9			Reserved						



	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
Byte 0	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	
Byte 1	Q16	Q15	Q14	Q13	Q12	Q11	Q10	Q9	Output
Byte 2	Q24	Q23	Q22	Q21	Q20	Q19	Q18	Q17	data
Byte 3	Q32	Q31	Q30	Q29	Q28	Q27	Q26	Q25	

## 3) Output Process Data