

RP20 Series I/O System

RP20-0400RD RP20-0202IV RP20-0400TC RP20-0400IV RP20-0004IV Analog I/O Module User Manual

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Support

If you have questions during product selection or usage, customers in China can call our technical support hotline at 400-700-5281 (Chinese service only).

For inquiries about the products described in this manual, please contact your local Kinco office or distributor. For information on user training, visit our company website or consult your local distributor for training plans.

Manual Acquisition

This manual is a paperless document. To obtain a PDF version, visit the Kinco official website (<u>https://en.kinco.cn/</u>), navigate to "Service \rightarrow Download", and search by keywords to download.

Device Description File Acquisition

The RP20 series I/O modules file (.xml) integrates device descriptions for all CPU modules in the AK8X0 series or RP20 series couplers. Please visit the Kinco official website https://www.kinco.cn/ (CN), <a href="https

Reversion History

Reversion Date	Release Version	Description
2025/01/16	RP20AIO_usermanual_V000	Initial Revision

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1 Safety Instructions

This chapter outlines safety precautions for proper use of the product. Before use, read this manual and any related documentation to understand the safety instructions. Failure to follow these precautions may result in death, serious injury, or equipment damage.

The "Danger," "Warning," and "Caution" notes in this manual are not exhaustive but supplement general safety measures.

Use this product within its design specifications to avoid malfunctions. Damage or issues caused by non-compliance are not covered under warranty.

Kinco assumes no legal responsibility for personal injury, property damage, or other accidents resulting from non-compliance with this manual or improper operation of the product.

To ensure safe use, this manual employs specific symbols and graphical markings to highlight important safety-related information. Please adhere strictly to these precautions.

\bigcirc	Danger/Prohibited Indicates prohibited actions. If proper precautions are not taken, it may result in serious personal injury or even death.
<u>.</u>	Warning Indicates cautionary actions. If proper precautions are not taken, it may result in serious personal injury or even death.
!	Caution Indicates general information or directives. If the corresponding precautions are not followed, it may lead to unintended results.

		When Power is Supplied
\bigcirc	*	During power supply, do not touch terminals or attempt disassembly. Wait for capacitors to discharge after turning off the power to avoid electric shock or hazards.
		During Assembly
\wedge	*	Assembly, wiring, maintenance, and inspection of this product should all be conducted by professional personnel who have received relevant training in electrical equipment.
	**	Do not use PLC in the following places: environments with dust, oil fumes, conductive dust, corrosive gases, or flammable gases; exposure to high temperatures, condensation, wind, or rain; environments with vibration or impact. Electric shock, fire, or misuse may also result in product damage.
!	*	During screw assembly or wiring, be careful not to allow metal shavings, dust, or wire ends to fall into the ventilation holes of the PLC. Otherwise, it may cause fire, malfunction, or unintended actions of the PLC.
	1	Wiring
\bigcirc	*	During power supply, do not touch any terminals or terminal blocks, and do not attempt to disassemble any units. Especially during power supply or just after power is turned off, capacitors need time to discharge, which may cause electric shock or other personal or equipment hazards. Before wiring operations, please ensure that all external power supplies to the system are completely disconnected. Otherwise, there is a risk of electric shock to personnel and equipment malfunction.
<u>!</u>	*	After completing the installation and wiring operations, before energizing and operating the product, ensure that it is fully assembled (including end caps, plate covers, etc.), otherwise there may be a risk of electric shock. Cable terminals should be properly insulated to ensure that the insulation distance between cables does not decrease after the cables are installed on the terminal block. Otherwise, there is a risk of electric shock, short circuit, or equipment damage.

- During screw assembly or wiring, be careful not to allow metal shavings, dust, or wire ends to fall into the ventilation holes of the PLC. Otherwise, it may cause fire, malfunction, or unintended actions of the PLC.
- Before connecting relevant cable connections, confirm the type of interface to be connected. Incorrect wiring may lead to controller or external equipment malfunctions or damage.
- Tighten the bolts on the terminal block within the specified torque range. Loose terminal bolts may result in circuit shorts, disconnections, fires, and other hazards. Over-tightening the bolts may damage the bolts and the controller, leading to component detachment, circuit shorts, fires, and other hazards.
- When using connectors and connecting external devices, use the tools specified by the manufacturer for pressing, crimping, or correct soldering. Poor connections may lead to shorts, fires, and other hazards.
- Do not bundle control lines and communication cables with main circuit or power supply lines, or place them too close to each other. Control lines and communication cables should be arranged at least 100mm away from main circuit power lines in cable ducts or spaces to avoid interference due to electromagnetic noise.
- For applications with severe interference, use special shielded cables for high-frequency signal input or output to improve the system's anti-interference capability.

During System Design

- When applying, it is essential to design a safety circuit to ensure that the control system remains safe even in the event of a power failure or controller malfunction.
 - If the output circuit experiences prolonged overcurrent due to exceeding the rated load current or load short circuits, the controller may smoke or catch fire. Therefore, external safety devices such as fuses or circuit breakers should be installed to interrupt power.



- * It is crucial to set up emergency braking circuits, protection circuits, interlocking circuits for forward and reverse operations, and upper and lower limit interlock switches in the external circuits of the controller to prevent machine damage.
- * To ensure safe equipment operation, design external protection circuits and safety mechanisms for significant accident-related output



!	 When the controller's CPU detects abnormalities in its system, it may automatically shut off all output signals. Additionally, partial circuit failures in the controller may result in uncontrolled outputs. To ensure equipment's normal operation, suitable external control circuits need to be designed. Damage to the transistor output unit of the controller may render its output status uncontrollable. Programmable controllers should be designed for use in indoor electrical environments with overvoltage level II. The power supply system level should include lightning protection devices to prevent lightning-induced overvoltage from affecting the programmable control
	Output terminals, and other ports, thus avoiding equipment damage.
	During Operation and Maintenance
\bigcirc	 Assembly, wiring, maintenance, and inspection of this product should all be conducted by professional personnel who have received relevant training in electrical equipment. Before cleaning or tightening the bolts on the terminal block or installing connector bolts, please ensure that the system's power supply is completely disconnected.
<u>,</u>	Before making any online modifications to the program, forcing outputs, starting (RUN), or stopping (STOP) operations during equipment debugging, it is essential to thoroughly read the user manual. Only proceed with these operations after ensuring their safety.

2 Overview

To explore diverse automation application scenarios and providing customers with more comprehensive automation solutions, Kinco has launched the Kinco-RP20 series bus-based I/O system.

2.1 Introduction

The RP20 series products, with their robust industrial design and manufacturing quality, outstanding performance, and comprehensive feature integration, are not only widely applicable in the field of general industrial automation but also highly suitable for various specialized smart sectors such as building automation, agricultural intelligence, energy monitoring, and energy management. They are designed to offer customers versatile and flexible solution possibilities.

2.2 Naming Rules



Fig. 2.2-1 RP20 series naming rule

According to the naming rules, the functionality of I/O modules can be inferred from their model numbers. For example:

- **RP20-0202IV**: 2 -channel analog input, 2- channel analog output, both support current and voltage signal.
- **RP20-0400RD**:4-channel RTD input module.
- **RP20-0400TC**: 4-channel thermocouple input module.

2.3 Fuselage Label



Fig.2.3-1 A sample of naming description

No.	Item	Description
1	Model and brief description	Includes basic information such as product model, power supply, and function description.
2	Product serial number	Unique and traceable.
3	Certification	Includes the product's certification standards.
4	Kinco official QR Code	Scan the code to directly access Kinco's official website for more information.
5	I/O wiring diagram	Provides a clear view of wiring information.
6	Kinco official website	Enter the website address to visit Kinco's official website for more information.

3 General Specification

Transportation and Storage Conditions		
	Ambient Temperature	-40°C∼+70°C
Climatic Conditions	Relative Humidity	10% \sim 95%,no condensation
	Atmospheric Pressure	Equivalent to 0-3000 meters above sea level.
Mechanical Conditions	Free Fall	With transport packaging, allows 5 drops from 1m height to the cement floor.
	Ope	erating Conditions
	Ambient Temperature	Open device with natural ventilation, ambient temperature range: -20 $^\circ C \sim 55 ^\circ C$.
Climatic	Relative Humidity	10% \sim 95%,no condensation
Conditions	Atmospheric Pressure	Altitude \leq 2000 meters
	Pollution Level	Suitable for pollution level 2
Mechanical Conditions	Sine Vibration	 5 < f < 8.4 Hz, Random: 3.5mm displacement; Continuous: 1.75mm displacement. 8.4 < f < 150 Hz, Random: 1.0g acceleration;
	Charle	Continuous: 0.5g acceleration
	EMC Immunity Level	Zone B, IEC61131-2
	Electrostatic Discharge	Air discharge 8kV, contact discharge 4kV. Performance Leve A
		DC power supply 0.5kV CM, 0.5kV DM.
Electromagnetic Compatibility	Surge	I/O and communication ports: 1kV CM.
	Fast Transient Burst	Performance Leve A Power coupling: 2kV, 5kHz. I/O and communication coupling: 1kV, 5kHz. Performance Level A
Protection Level		IP20
Cooling Type		Natural air cooling
Installation Type		DIN35 rail mounting

4 Product List

Order Number	Description
	AI 2×IV, 4-20mA/0-20mA/0-10V/1-5V
NP20-02021V	AO 2×IV, 4-20mA/0-20mA/0-10V/1-5V
RP20-0400RD	AI 4×RTD, Pt100/Pt1000/Cu50
RP20-0400TC	AI 4 \times TC, J/K/E/S/T/mV
RP20-0400IV	AI 4 $ imes$ IV, 4-20mA/1-5V/ \pm 10V/ \pm 20mA
RP20-0004IV	AO 4×IV, 4-20mA/0-20mA/±10V/1-5V

5 Component Description



No.	Item	Comment	
			Refer to Chapter 2.2
		Indicate	Meaning:
(1)	Color	the type	Orange, Coupler
	label	of the	Yellow, Analog output module
		module	Green, Analog input module
			Indigo, Mixed AI/AO module
			Steady On: Normal operating state
		PR:	Fast Blinking (50ms / 50ms): Error event
\bigcirc	Indicator	Module	Slow Blinking (200ms / 200ms):Uninitialized ID
	lights	operating	Single Blinking (200ms / 1000ms): Stopped state
		status	Double Blinking (200ms / 200ms / 1000ms): Safe
			operating state

		Err:	Steady On: An internal error has occurred, refer
		Error	to <u>Chapter 12</u> for error diagnosis.
		state	Off: No internal error has occurred.
		0-3 :	
		Channel	Red light indicate the channel input exceed the
		operating	range
		status	
3	I/O connector	Plug-In Spring Terminals: Tool-free installation and efficient connections. For details, refer to specific model connection diagrams.	
4	Locking latch	Compatible with standard DIN35 rails for assembly.	
B	Side	Used for ba	ckplane (expansion) communication and power
\bigcirc	connector	supply.	
6	DIN rail slot	Standard DIN35 rail installation.	
7	Fuselage label	Includes ba serial numb <u>Chapter 2.3</u>	sic product information such as model number, per, certifications, and wiring diagrams. Refer to for details.
8	Top front Rail	Used for du	al-side alignment during module coupling,
\bigcirc	Bottom	ensuring ve	rtical alignment with the front module.
9	front rail		
(10)	Top rear		
U	rail	Used for du	al-side alignment during module coupling,
(1)	Bottom	ensuring ve	rtical alignment with the rear module.
	rear rail		

6 Technical Specification

6.1 RP20-0202IV

Input Specifications		
Input channel	2	
Resolution ratio	12 bit	
Conversion rate	15 time/s	
Signal type	4~20mA,0~20mA,1~5V,0~10V	
Measuring precision	0.3%F.S.	
Input resistance	Current mode: 100 Ω	
	Voltage mode: 50 kΩ	
Signal limit value	Current input does not exceed 24mA	
	Voltage input does not exceed 12V	

Channel diagnosis	Disconnection warning(Only supported in 1-5V						
Channel diagnosis	and 4-20mA modes)						
Out	put Specifications						
Output channel	2						
Resolution ratio	12 bit						
Conversion rate	15 time/s						
Signal type	4~20mA,0~20mA,1~5V,0~10V						
Measuring precision	0.3%F.S.						
External loading	Current mode: Max 500 Ω						
External loading	Voltage mode: Min 1 kΩ						
Gen	eral Specifications						
Hot swapping	×						
K-Bus current consumption	150mA (5V DC, room temperature)						
Indicator	PR: power light ERR: working status indicator light 0-1: corresponding channel input signal transfinite indicator light						
Terminal rated input voltage	24V DC (20.4V DC \sim 28.8V DC)						
Terminal rated input current	80mA (Typical value at 24V)						
Dimensions (W $ imes$ H $ imes$ D)	12mm \times 100mm \times 80mm						
Weight	pprox70g						

6.2 RP20-0400RD

Technical Specifications				
Input channel	4			
Resolution ratio	24 bit			
Sensor	Pt100,Pt1000,Cu50,Cu100			
Wiring	Two-wire、Three-wire			
Temperature resolution ratio	0.1 ℃			
Measuring precision	±0.2%			
Conversion rate	1 time/s			
Filter	None filtering or average filtering			
Channel diagnosis	Transfinite , disconnection warning			
Isolation	V			
Hot swapping	×			
K-Bus current consumption	160mA (5V DC, room temperature)			

Indicator	PR: power lightERR: working status indicator light0-3: corresponding channel input signaltransfinite indicator light
Dimensions (W $ imes$ H $ imes$ D)	12mm $ imes$ 100mm $ imes$ 80mm
Weight	\approx 70g

6.3 RP20-0400TC

Technical Specifications						
Input channel	4					
ADC resolution ratio	24 bit					
Sensor	J/K/E/S/T/mV					
Wiring	Two-wire					
Temperature resolution ratio	0.1 °C					
Cold-junction	Internal cold junction/external cold junction					
Measuring precision	±0.2%F.S. ^[1]					
Conversion rate	1 time/s					
Filter	None filtering or average filtering					
Channel diagnosis	Transfinite , disconnection warning					
Isolation	V					
Hot swapping	×					
K-Bus current consumption	160mA (5V DC, room temperature)					
Indicator	PR: power lightERR: working status indicator light0-3: corresponding channel input signaltransfinite indicator light					
Dimensions (W $ imes$ H $ imes$ D)	12mm $ imes$ 100mm $ imes$ 80mm					
Weight	\approx 70g					

*[1]: The data here represents ADC sampling accuracy, and the actual temperature measurement accuracy is related to cold junction compensation.

6.4 RP20-0400IV

Technical Specifications				
Input channel	4			
Resolution ratio	16 bit			
Signal type	4~20mA,0~20mA,1~5V,0~10V			
Measuring precision	\pm 0.2%F.S.			
Conversion rate	30 time/s			

Input resistance	Current mode: 100 Ω						
Input resistance	Voltage mode: 50 kΩ						
Input limit value	Current:±30mA						
input innit value	Voltage: \pm 15V						
Filter	None filtering or average filtering						
Channel diagnosis	Disconnection warning(Only supported in						
Channel diagnosis	1-5V and 4-20mA modes)						
Isolation	√						
Hot swapping	x						
K-Bus current consumption	150mA (5V DC, room temperature)						
	PR: power light						
Indianton	ERR: working status indicator light						
maicator	0-3: corresponding channel input signal						
	transfinite indicator light						
Dimensions (W $ imes$ H $ imes$ D)	12mm $ imes$ 100mm $ imes$ 80mm						
Weight	\approx 70g						

6.5 RP20-0004IV

Technical Specifications				
Output channel	4			
Resolution ratio	16 bit			
Conversion rate	30 time/s			
Signal type	4~20mA,0~20mA,1~5V,0~10V			
Measuring precision	±0.2%F.S.			
External loading	Current mode: 500 Ω			
	Voltage mode: 1 kΩ			
Isolation	×			
Hot swapping	×			
Terminal rated input voltage	24V DC (20.4V DC \sim 28.8V DC)			
Terminal rated input current	100mA (Typical value at 24V)			
K-Bus current consumption	140mA (5V DC, room temperature)			
Indicator	PR: power light			
	ERR: working status indicator light			
Dimensions (W $ imes$ H $ imes$ D)	12mm $ imes$ 100mm $ imes$ 80mm			
Weight	\approx 70g			

7 Wiring

7.1 RP20-0202IV



Fig.7.1-1 RP20-0202IV wiring diagram

7.2 RP20-0400RD



Fig.7.2-1 RP20-0400RD wiring diagram

7.3 RP20-0400TC



Fig.7.3-1 RP20-0400TC wiring diagram

7.4 RP20-0400IV



Fig.7.4-1 RP20-0400IV wiring diagram

7.5 RP20-0004IV



Fig.7.5-1 RP20-0004IV wiring diagram

8 Use introduction

8.1 RP20-0202IV

8.1.1 Measurement range and measurement value

The following table shows the input range and input value format of RP20-0202IV. I: Actual current value, V: Actual voltage value.

Signal form	Measurement range	Measurement value representation format			
4 \sim 20mA	$3.2{\sim}21{ m mA}$	1~1000			
0 \sim 20mA	0 \sim 21mA	1×1000			
1~5V	0.8~5.1V	V~1000			
0~10V	0~11V	V×1000			

The following table shows the output range and output value format of RP20-0202IV. I: Actual current value, V: Actual voltage value.

Signal form	Output range	Output value specified in the user program			
4∼20mA	$3.92{\sim}20.4$ mA	1×1000			
0 \sim 20mA	0 \sim 20.4mA	1×1000			
1~5V	$0.96{\sim}5.1{ m V}$	V~1000			
0~10V	0∼10.2V	V×1000			

Note: If the output value specified in the user program exceeds the upper and lower limits of the selected range, the output signal will remain at the upper and lower limit.

Name	Represent value and corresponding meaning
	4~20mA
Signal Form	0~20mA
Signal Form	1~5V
	0~10V
Filtoring Modo	None Filtering
	Average Filtering
Stopmode After	Keep Current Value: Keep the current value output when stopped
Lost Link	Retain Preset: Output the set value when stopped
Stopvalue After	Output value when disconnected, please write according to the
Lost link	selected output mode

8.1.2 Startup parameter description

8.1.3 Use demonstration

8.1.3.1 Configuration

<u>Step1</u>:

Right-click RP20C_ECT , select Add device, and select RP20-0202IV to add it.

	RP20C_ECT X			
	Add Device			
Device (AK840M-0808DTN)	Name PP30 0202TV			
PLC Logc	Anton			
Application				
Distance (marcage	Appello device O biser device O high device O optaste device			
Task Conference	String for a full text search Vendor <all vendors=""></all>			
B EtherCAT Task	Name	Vendor	Verrion	Description
E C Maintack		Vendor	renaron	o de la palor
All a c pec	- B Reputes			
HEI HEIO ANTO)	- See Edit Col			
EVE 0 (EVE 0)	- Bill PD20.000401(4-channel A0 module)	Kinco Electric (Electrica) I tri	0	EtherCAT Medule imported from Claure VM + DD20_ECT_1_1_0_6_vml Devices DD20_00040// 4-channel 40_module)
	BP30.00000P// channels CP mod (a)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Clave XML RE20 ECT 110.6 vml Device: RE20-000PD(9 channel: D0 module)
(III LocalBus (LocalBus)	RP20-00160TN(16 chappels DO(NPN) module)	Kinco Flectric (Shenzhen) Ltd.	0	Ether: AT Module imported from Slave XMI : RP20 FCT 1.1.0.6 vml Device: RP20-00160TM(16 chamels DOB/PN) module)
Modbus Slave TCP (Modbus Slave TCP ETH)		Kines Cleatric (Cheenheet) Ltd.	-	File CAT Models instant of free flows 194 - 0020. FOT 1.1.6.6 cml Design 0020 00400000(16 design 000040) models
B FiberCAT (EtherCAT Master SoftMotion)	PP20.02020/(2-channel AT and 2-channel AD module)	Kinco Electric (Sharohan) I tri	0	Ether: AT Module imported from Slave VM - DP20 ECT 1 1 0.6 vml Device: PP20-02020/(2-channel AT and 2-channel AD module)
-K BP20C ECT (BP20C-ECT-1, 1, 0, 6)	PP20.0400TV(4 channels 41 module)	Kinco Electric (Shenzhen) i tri	0	Ether: 4T Module imported from Slave VM - RP20 ECT 1 1 0.5 vml Device: RP20-04001V(4 channels 4T module)
A SoftMotion General Axis Pool	BP20-0400RD(4 channels RD module)	Kinco Electric (Shenzhen) I td.	0	Ether: AT Module imported from Slave VM : RP20 ECT 1.1.0.6 vml Device: RP20-0400RD(4 channels RD module)
	BP20-0400TC(4 channels TC module)	Kinco Flectric (Shenzhen) td.	0	EtherCAT Module imported from Slave XM : BP20 ECT 1.1.0.6 xml Device: BP20-0400TC(4 channels TC module)
	BP20-08080TP(8-channel DL and 8-channel DO(PNP) module)	Kinco Electric (Shenzhen) I trl.	0	EtherCAT Module imported from Slave XMI: RP20 ECT. 1.1.0.6.xml Device: RP20-08080TP/8-channel DI and 8-channel DO(PNP) module)
	fill RP20-1600DT/16 channels DI module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XMI: RP20 ECT 1, 1.0.6.xml Device: RP20-1600DT(16 channels DI module)
	Group by category Display all versions (for experts only) Display out	tdated versions		
	Lanes F720-00271(1 dwnref Al (md 2 dwnref A0 module) Vereder Toxol Erecht (2 herehold) Life Categories: Module Versione C Order Hamile 129-20-2021 Description: Else CAT Module imported from Save XM, 1972, [CT_1.1.0.4	6.xml Device: RP20-02021V(2-chan	nel AI and 2-c	trannel k0 module)
	Apprend selected device as last child of IP26C_EC (You can select another target node in the navigator while this window is o	¢en.}		O Add Davies Co

Fig.8.1.3-1 Add device

Step2:

Left click RP20-0202IV device to enter the configuration , select the startup parameters to configure the required parameters. The default configuration is shown in the figure. AI channel mode is set to 4-20mA, AI channel filtering mode is set to average filtering, AO channel mode is set to 4-20mA, and AO channel stopmode after EtherCAT lost link is set to keep current value.

RP20 series analog I/O module user manual

evices 👻 🕈 🗙	EtherCAT	kus KR	IP20C_ECT	20_0202IV ×						
• • * * *	Startup Parameters	💠 Add	Edit 🗙 Delete 🕸	Move Up 👙 Move Down						
Device (AK8404-0808DTN) Device (AK8404-0808DTN)	Module I/O Mapping	Line	Index:Subindex	Name AI CH0 Sonal Form	Value 4mA~20mA(4000~20000)	Bit Length	Abort on Error	Jump to Line on Error	Next Line	Comment AI 040 Signal Form
Library Manager	Module IEC Objects	- 2	16#8000:16#02	AI CH1 Signal Form	4mA~20mA(4000~20000)	8			0	AI CH1 Signal Form
PLC PRG (PRG)		- 3	16#8000:16#03	ALCH0 Filtering Mode	Average Filtering	8			0	AL CHO Filtering Mode
= 2 Task Configuration	Information	-4	16#8000:16#04	AI CH1 Filtering Mode	Average Filtering	8			0	AI CH1 Filtering Mode
EtherCAT_Task		- 5	16#8000:16#05	AO CH0 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH0 Signal Form
😑 🚯 MainTask		6	16#8000:16#06	AO CH1 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH1 Signal Form
di PLC PRG		- 7	16#8000:16#07	AO CHO Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CHO Stopmode After Et
HISTO (HISTO)		- 8	16#8000:16#08	AO CH1 Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CH1 Stopmode After Et
EXP_0 (EXP_0)		- 9	16#8000:16#09	AO CH0 Stopvalue After EtherCAT Lost Link	0	16			0	AO CH0 Stopvalue After Eth
- DP_1 (EXP_1)		- 10	16#8000:16#0A	AO CH1 Stopvalue After EtherCAT Lost Link	0	16			0	AO CH1 Stopvalue After Et
 K stract_prof stract(st_11.0.0) (ii) Stract preparation (strategy) (iii) Strategy (strategy) (iii) Strategy (strategy) (iii) Strategy (strategy) (iii) Strategy (strategy) 										



<u>Step3</u>:

Declare variables in the program and map them to the IO map.

=] *#21						200.00				
- Device (AK840M-0808DTN)	Startup Parameters	Find	Filter Show all			· 🗠	Add FB t	or IO C	hannel T Go to I	nstance
PLC Logic	Module I/O Mapping	Variable		Mapping	Channel	Address	Туре	Unit	Description	
= 🔘 Application	Hodale to Happing	🗏 🧀 16#1600 0202IV	(2-channel AO) maping							
Library Manager	Module IEC Objects		LC_PRG.AO	۰.	Output CH0	%QW8	INT		Output CH0	
PLC_PRG (PRG)	A COLOR	H- **			Output CH1	%QW9	INT		Output CH1	
😑 🎆 Task Configuration	Information	a 16#1A00 02021	(2-channel AI) maping							
EtherCAT_Task		🗄 - 🦘 Application.P	LC_PRG.AI	**	Input CH0	%IW10	INT		Input CH0	
🖻 🍪 MainTask		±-*>			Input CH1	%IW11	INT		Input CH1	
B PLC_PRG										
HSIO (HSIO)										
EXP_1 (EXP_1)										
- 📶 LocalBus (LocalBus)										
Modbus_Slave_TCP (Modbus Slave TCP ETH1										
EtherCAT (EtherCAT Master SoftMotion)										
K RP20C_ECT (RP20C-ECT-1.1.0.6)										
RP20_0202IV (RP20-0202IV(2-chann										
SoftMotion General Axis Pool										
									Reset Mapping	Always update
		Ve - Create permit	la 🌐 🕹 a Man to aviation uni	able						
Sevices POUs		· Create new variat	ie gr – Hap to existing van	abie						



8.1.3.2 Transfinite alarm and lost link detection method

Transfinite alarm

When the measured value exceeds the limit, the transfinite alarm is triggered, and the corresponding channel indicator light is steady red. The indicating value is the upper and lower limit of the corresponding mode. For example, if the set mode is

4-20mA and the actual input is 30mA, the indicating value is 21000(corresponding upper limit is 21mA); Set the mode 4-20mA, the actual input is 2mA, then the indicated value is 3200(corresponding to the lower limit value of 3.2mA).

Lost link detection

When measuring the lost link , for 4-20mA and 1-5V mode, the lost link detection is triggered, and the corresponding channel indicator light is steady red with an indicator value of -32768.

8.2 RP20-0400RD

8.2.1 Measurement range and measurement value

The following table shows the measurement range and measurement format of the RP20-0400RD module. The RD module can be connected to thermal resistors (Pt100, Pt1000, Cu100, Cu50) for temperature measurement, and supports two wire and three wire connection method. For details, please refer to <u>Section 7.2</u>.

T: Measured temperature R: Measured resistance value

For example, when the signal channel configuration is Pt100, the read analog value is 365, and the actual corresponding temperature value is 36.5 $^{\circ}$ C.

Signal form	Measurement range	Measurement value representation format
Pt100	-200∼850° C	
Pt1000	-50∼300°C	T (°C) × 10
Cu50	-50∼150°C	1(0)×10
Cu100	- 50∼150° C	

8.2.2 Startup parameter description

Name	Represent value and corresponding meaning
	PT100
Signal Form	PT1000
Signal Form	Cu50
	Cu100
Filtoring Mode	None Filtering
Filtering Mode	Average Filtering

8.2.3 Use demonstration

8.2.3.1 Configuration

Step1:

Right-click RP20C_ECT , select Add device, and select RP20-0400RD to add it.

RP20 series analog I/O module user manual

Device (4K840M-08080771) PLC Logic PLC Logic PLC Logic	Startup Para Module I/O I	Name RP20_0400RD Action Append device Insert device Plug device Update device				
Burary Manager Dec_PRG (PRG) Book Configuration Set EtherCAT_Task	Module IEC	String for a full text search Vendor <all vendors=""> Name Image: Image content Peldbuses</all>	Vendor	Version	Description	
(#) Martinak (#) Arc, Find (#) Arc, Find, Start, Find, Sta		Jackson (1) Jackson (2) Social (2)	Inco Electric (Dimension) List. Inco Electric (Dimension) List.	0 0 0 0 0 0 0 0	EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400401(+downel AD model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400008(B) downels DP model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400008(B) downels DP model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400008(B) downels DP model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400008(B) downels DP model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400007(B) downel DP model) EBeCAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 400007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD model) EBECAT Mode reports from Size VM. 89/21_CT_11.0.8. on Over: 87/22 40007(downel AL and 2-downel AD	nodule)
		Append selected device as last child of RP20C_ECT (You can select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while this window is a select another target node in the navigator while the nav	open.)		_ 46 Dense	, co
				-		

Fig.8.2.3-1 Add device

<u>Step2</u>:

Left click RP20-0400RD device to enter the configuration , select the startup parameters to configure the required parameters. The default configuration is shown in the figure, signal form is PT100, filtering mode is average filtering.

Device (AK840M-0808DTN)	Startup Parameters	7 400	CAL > Desete 1	HAVE OF A MOVE DO	in the second se					
B III PLC Logic	Module I/O Mapping	Line I	Index:Subindex	Name	Value	Bit Length	Abort on Error	Jump to Line on Error	Next Line	Comment
🖹 🔘 Application		- 1 1	16#8000:16#01	CH0 Signal Form	PT100	8			0	CH0 Signal Form
Library Manager	Module IEC Objects	- 2 1	16#8000:16#02	CH1 Signal Form	PT100	8			0	CH1 Signal Form
PLC_PRG (PRG)		- 3 1	16#8000:16#03	CH2 Signal Form	PT100	8			0	CH2 Signal Form
ask Configuration	Information	-4 1	16#8000:16#04	CH3 Signal Form	PT100	8			0	CH3 Signal Form
EtherCAT_Task		- 5 1	16#8000:16#05	CH0 Filtering Mode	Average Filtering	8			0	CH0 Filtering Mode
😑 😂 MainTask		6 1	16#8000:16#06	CH1 Filtering Mode	Average Filtering	8			0	CH1 Filtering Mode
D PLC_PRG		- 7 1	16#8000:16#07	CH2 Filtering Mode	Average Filtering	8			0	CH2 Filtering Mode
HSIO (HSIO)		- 8 1	16#8000:16#08	CH3 Filtering Mode	Average Filtering	8			0	CH3 Filtering Mode
- (EXP_0 (EXP_0)										
- 🗊 DP_1 (DP_1)										
LocaBus (LocalBus)										
Modbus_Slave_TCP (Modbus Slave TCP ETH1										
EtherCAT (EtherCAT Master SoftMotion)										
K RP20C_ECT (RP20C-ECT-1.1.0.6)										
RP20_0202IV (RP20-0202IV(2-chann										
RP20_0400IV (RP20-0400IV(4 chann										
11 RP20_0400RD (RP20-0400RD(4 char)										
RP20_0400RD (RP20-0400RD(4 char										
SoftMotion General Axis Pool										
SoftMotion General Axis Pool										
SoftMotion General Axis Pool										
IRP20_0400RD (RP20-0400RD (4 char SoftMotion General Axis Pool										
III RP20_0400RD (RP20_0400RD(4 char										
 RP30_0400000 (RP30-040080)(4 char SoftMotion General Asis Pool 										
FP30_UH00ED (FP20-0408ED(4 char SoftHoton General Aus Pod										
ା ଗ୍ରୀ ସହରୁ Johanso (ହୋଇ -ବୋଇସ) d daar 🌡 SoftMotion General Asia Pool										
 SoftMoton General Ass Peal SoftMoton General Ass Peal 										
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i proz. Jonato (proz. ovastu) (4 dar b. SoftMoton Gered Ass Pool										
I offetion General Ass Pol Soffetion General Ass Pol										
Soffection General Ass Prod Soffection General Ass Prod										
I way, peeps dezero deservity of ever 3. Soffetion General Ass Pol										
2 State Detroid Control (1 and b) Soffetion General Asa Pol										
i j (PP3) 244000 (PP3) 44000 (PP3) 44000 Sofftetion General Ace Pool										
i gi proz, okonici (proz, okonici) (di ovr 3) Soffetion General Ales Pool										
i j (PP3) 244000 (PP3) 44000 (PP3) 4400 (PP3) 44										
2 South Decision Decision Control (new b) Soffetion General Asa Pol										

Fig.8.2.3-2 Configure startup parameters

Step3:

Declare variables in the program and map them to the IO map.

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Outer Outer (Med/000000) Image: Second Control	es - + ×	EtherCAT 🔐 LocalB	us K RP20C_ECT 🔐 I	RP20_0202IV	RP20_04000V	RP20_0	400RD ×				
Image: Section (Section (S]) 未命名1 〒	Startup Parameters	Find	Filter Show all		• + •	Add FB for IC	Channel		o to Instance	
Image: Section of the section of th	BID OCLASSION-OSOBOTIN)		Variable		Manning	Channel	Address	Type	Linit	Description	
Image: Address with stage Image: Address with staddress with stage Image: Address with stage	E C Application	Module I/O Mapping	B 16+1402 040000 (4 ch	accels PD modele) macing		error ner	, autors	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	o line	o estimated	
• Market State	- Ubracy Manager	Module IEC Objects	E M Application PLC PR	6 Tempreture	74	Input CHD	SCIW16	INT		Toput CHD	
Image: Sector Sector Trans. Image: Sector Sector Trans. Image: Sector S	PLC PRG (PRG)		8-10			Input CH1	%IW17	INT		Input CH1	
	Task Configuration	Information	8-10			Input CH2	%IW18	INT		Input CH2	
Image: Second	EtherCAT_Task		10 Mp			Input CH3	%IW19	INT		Input CH3	
● BC page	= 😒 MainTask										
Implement	DIC_PRG										
■ Date (Serie) ■ Dat	HSIO (HSIO)										
Image: Service (Service) Image: Service) Image: Service) <td>- I EXP_0 (EXP_0)</td> <td></td>	- I EXP_0 (EXP_0)										
Image: Section 201 I	EXP_1 (EXP_1)										
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	Modbus_Slave_TCP (Modbus Slave TCP ETH1										
Rest Mupping Alwys updatestrability Use gavent device Rest Mupping Alwys updatestrability Use gavent device	EtherCAT (EtherCAT Master SoftMotion)										
Paul Control (Paul Control Contro	R RP20C_ECT (RP20C-ECT-1.1.0.6)										
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Software General Ales Pool Rest Mapping Alwys update smaller Use general device	RP20_0400IV (RP20-0400IV(4 chang										
Rest Moonry Alwys update shared data	Sufficient Connect Aria Deal										
Rest Mapping Akrysupdrevenables Use gener device	a solution deletarious root										
Reset Mapping Annys update venables Use garent device											
Rest Mapping Akrysupdrevenables Use gener device											
Reset Mapping Annys update vanables Use garent device											
Rest Moping Alwys updressmables Use gavent device											
Rest Moping Anny updrevenables Use gaven device											
Rest Moping Alwys update sambles (use parent device											
Reset Mapping Always up detervanables Use gaven device											
Raset Mapping Always update vernables Use parent device											
Reset Mapping Always up detervanables Use gavent device											
Rast Mapping Akeys update emails Use parent device											
Reset Mapping Always up detervanables Use gavent device											
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Reset Mapping Allersy update verhables Use parent device											
Resat Mapping Always update vertables Use parent device											
Rest Mapping Always update variables Use parent device											
								Res	et Mapp	ing Always update variables Use par	ent device setting
			where the strength	12 A. 10 A. 10 A. 10 A.							

Fig.8.2.3-3 Mapping variable

8.2.3.2 Transfinite alarm and lost link detection method

Transfinite alarm

When the measured value exceeds the limit, the transfinite alarm is triggered, and the corresponding channel indicator light is steady red. The indicating value is the upper and lower limit of the corresponding mode. For example, if the set mode is PT100 and the actual input is 900°C, the indicating value is 8500(corresponding upper limit is 850°C); Set the mode is PT100, the actual input is -300°C, then the indicated value is -2000(corresponding to the lower limit value is 200°C).

Lost link detection

When measuring the lost link, the lost link detection is triggered, and the corresponding channel indicator light is steady red with an indicator value of -32768.

8.3 RP20-0400TC

8.3.1 Measurement range and measurement value

The following table shows the measurement range and measurement format of the RP20-0400TC module. The TC channel supports different types of thermocouples, including J, K, E, S, and T. The default configuration is J thermocouple. For details, see <u>Section 7.3</u>. In addition, the module can also measure mV signal.

T :Measured temperature mV : Measured mV signal value

Note:In the operating temperature range, when the temperature change rate is less than 0.3 °C/min, the temperature measurement accuracy =ADC sampling accuracy + cold junction compensation error.

Signal form	Measurement range	Measurement value representation format
J	-210~1200 ℃	
К	-270~1300 ℃	T (°℃) × 10
E	-270~1000 ℃	

S	-50~1600 ℃	
Т	-200~400 ℃	
mV	0~99mV	mV × 10

8.3.2 Startup parameter description

Name	Represent value and corresponding meaning
	PT100
Signal Form	PT1000
Signal Form	Cu50
	Cu100
Filtoring Mode	None Filtering
Filtering wode	Average Filtering
Cold Junction	Internal Cold Junction Compensation
Compensation Mode	External Cold Junction Compensation

8.3.3 Use demonstration

8.3.3.1 Configuration

<u>Step1</u>:

Right-click RP20C_ECT , select Add device, and select RP20-0400TC to add it.

	Startup Para	Name RP20_0400TC_1				
- IN PLC Look		Action				
= 🙆 Application	Module 1/0 I	O Append device O Insert device O Plug device O Update device				
Library Manager	Module IEC /	String for a full text search Vendor <all vendors=""></all>				
PLC_PRG (PRG)	Information	News	Vender	Manalana	Bernintin	
Task Configuration		Name	vendor	version	Description	
SS EtherCAT_Task		Peldbuses				
III - SS MainTask		= Bra EtherCAT				
- @ PLC_PRG		In But Module				
HISIO (HSIO)		(III KP20-COD4LV(+-Channel AD module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from slave XML: 10/20_ECT_1.1.0.6.xml Device: 10/20-00040(4-channel AD module)	
BP_0 (EXP_0)		(III) KP20-COUGUR (8 channels DR module)	kinco Electric (Shenzhen) Lita.	U	EtherCAT Module imported from slave AMLI KP20_ECT_1.1.0.6.Xml Device: KP20-00080K(8 channes DK module)	
BP_1 (DP_1)		 RP20-0016DTN(16 channels DO(NPN) module) 	Kinco Bectric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0016DTN(16 channels DO(NPN) module)	
LocalBus (LocalBus)		RP20-0016DTP(16 channels DO(PNP) module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0016DTP(16 channels DO(PNP) module)	
Modbus_Slave_TCP (Modbus Slave TCP	PETHI	RP20-02020V(2-channel AL and 2-channel AO module)	Kinco Electric (Shenahen) Ltd.	0	EtherCAT Module imported from Slave XML: KP20_ECT_1.1.0.6.xml Device: KP20-02020V(2-channel AL and 2-channel AD module)	
EtherCAT (EtherCAT Master SoftMotion	an)	(i) K0-20-O4002V(4 channels Al module)	Kinco Electric (Shenzhen) Ltd.		EtherCAT Module imported from slave XML: 10/20_ECT_1.1.0.6.xml Device: 10/20-04001V(4 channes AL module)	
R RP20C_ECT (RP20C-ECT-1.1.0.6)		III RP20-0400RD(4 channels RD module)	Kinco Bectric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0400RD(4 channels RD module)	
- III RP20_02021V (RP20-02021V(2-	2-chanr	RP20-0400TC(4 channels TC module)	Kinco Bectric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0400TC(4 channels TC module)	
BP20_0400IV (RP20-0400IV(4)	4 chann	RP20-0808DTP(8-channel DI and 8-channel DO(PNP) module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0808DTP(8-channel D1 and 8-channel D0(PVP) module interview.	e)
BP20_0400RD (RP20-0400RD(+	(4 char	RP20-160001 (16 channels UL module)	Kinco Bectric (shenzhen) Ltd.	U	EtherCA1 Module imported from Save XML: RP20_EC1_1.1.0.6.xmi Device: RP20-160001(16 channels D1 module)	
SoftMotion General Axis Pool	(4 chan	Group by category Bisplay all versions (for experts only) Bisplay out Mames RP20-0400TC(4 channels TC module) Vendors Kinco Electric (Shenzhen) Ltd. Categories: Module	dated versions			*
	(4 chan	Create point carbon in the sensitive respect to the sensitive resp	stated versions	neis TC modul	a)	8
ୁଞ୍ଜା କମ୍ପର Justice (Pro-osotice ି a SoffMoton General Ava Pool	(4 chan	Creace by catagory Display all answinds presents only Display cat Manuse SPA OVER Category Console Manuse SPA OVER Category Console Version C Descriptions EtherCAT Noble Imported from Save XNL SP20, ECT_1.1.0 Appendia/Sector Category Console Provide State Category Console Category Console Category Console Provide State Category Console Category Console Category Console Provide State Category Console Category C	dated versions 5.xml Device: 89:20-0400TC(4 dhan pen.)	neis TC modul	a) 60 Deves	
ing esta_sector (erzo-centre) - 3. softwisten General Aus Pool	(4 chan	Chapter of states of the state	Saml Device: 8920-0400TC(4 chan	neis TC modul	a) Add Denne	
1 및 Portuge Sector Carlos Association	(4 chan	Creace by catagory Display all answinds presents only Display call The second	s.xml Device: RP20-0400TC(4 chan	nels TC modul	a) Add Device	× •
 If any source personance of the second second	(4 chan	Crispio dratopy Distribution and a municipal production by Display and The State of the State	sant Device: RP20-0400TC(4 dhan	neis TC modul	a) Add Derror	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
ୁ ଗ୍ରାମ୍ୟରେ କୋଟେକୁ Soffetion Greek Als Pool	(4 chan	Creace by creacy in Data part an examination of the open could be added by	5.xml Device: 8920-440TC(4-ban	neis TC modul	a) Add Device	
Liggi Retty Johan Careel Aus Pool	(4 chan	Crisp or stagory Distribution and a municipal processing of the stage	5.ml Device: 8720-4401TC(4 chan	neis TC modul	0 Add Denns Rent Happing Always updates antiables (bue parent device setting	×

Fig.8.3.3-1 Add device

Step2:

Left click RP20-0400TC device to enter the configuration , select the startup parameters to configure the required parameters. The default configuration is shown in the figure, signal form is J, filtering mode is average filtering, cold junction compensation mode is internal cold junction compensation(When using the default internal cold junction configuration, the module needs to run for about 45 minutes after starting work from the program end to warm up to achieve relatively stable measurement accuracy).

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Device (AK840M-0808DTN)		_								
E DI PLC Logic	Module I/O Mapping	Line	IndexSubindex	Name	Value	Bit Length	Abort on Error	Jump to Line on Error	Next Line	Comment
- O Application	and the second sec	1	16#8000:16#01	CH0 Signal Form	3	8			0	CH0 Signal Form
- B Library Manager	Module IEC Objects	- 2	16#8000:16#02	CH1 Signal Form	1	8			0	OH1 Signal Form
PLC_PRG (PRG)	Information	- 3	16#8000:16#03	CH2 Signal Form	1	8			0	CH2 Signal Form
Task Configuration		- 4	16#8000:16#04	CH3 Signal Form	1	8			0	CH3 Signal Form
BetherCAT_Task		- 5	16#8000:16#05	CH0 Filtering Mode	Average Filtering	8			0	CH0 Filtering Mode
B 🚯 MainTask		- 6	16#8000:16#06	CH1 Filtering Mode	Average Filtering	8			0	CH1 Filtering Mode
-셴] PLC_PRG		- 7	16#8000:16#07	CH2 Filtering Mode	Average Filtering	8			0	CH2 Filtering Mode
HSIO (HSIO)		8	16#8000:16#08	CH3 Filtering Mode	Average Filtering	8			0	CH3 Filtering Mode
- (EP_0 (EP_0)		- 9	16#8000:16#09	CH0 Cold Junction Compensation Mode	Internal Cold Junction Compensation	8			0	CH0 Cold Junction
EP_1 (EP_1)		10	16#8000:16#0A	CH1 Cold Junction Compensation Mode	Internal Cold Junction Compensation	8			0	CH1 Cold Junction
LocalBus (LocalBus)		- 11	16#8000:16#08	CH2 Cold Junction Compensation Mode	Internal Cold Junction Compensation	8			0	CH2 Cold Junction
Modbus_Slave_TCP (Modbus Slave TCP ETH1		- 12	16#8000:16#0C	CH3 Cold Junction Compensation Mode	Internal Cold Junction Compensation	8			0	CH3 Cold Junction
RP20C_ECT (PP20-627-1.1.0.6) RP20_0221V(2-charn RP20_02021V(2-charn RP20_04000(4 charn RP20_04000(6 charn RP20_04000(2 charn RP20_04000(2 charn	1									
••• ••	1									
Kerker (1992)	1									
Kova, jeri (1920: 407-11), 1020 Sova, jeri (1920: 407-11), 1020 Sova, jeri (1920: 4020), 1020]									
Kover, per (1920-1921-110-6) Sover, per (1920-1921-110-6) Sover, per (1920-1920-110-6) Sover, per 20-0400 (1920-1920-100-6) Sover, per 20-0400 (1920-1920-1920-1920-1920-1920-1920-1920-	1									
R Book (FT 8906 EFT 114.6) Source (FT 8906 EFT 114.6)	1									
Report For Advances	1									
R Bozc, Erf Bozc, Erf Lisz, Bozc, Erf Lisz, Bozc, Brit, Lisz, Bozc, Brit, Bozc, Brit, Lisz, Bozc, Brit, Bozc,	1									
Kooc, Err (1900-Cerr (1-10-6) Web Jose Cerr (1-10-6) Web Jose Cerr (1-10-6) Web Jose (1900-Cerr (1-10-6) Web Jose (1900-Cerr (1-10-6) Web Jose (1900-Cerr (1-10-6) Web Jose (1900-Cerr (1-10-6) Schröder Cerr (1-10-6)	1									
R Bozc, Erf Bozc, eff. 19.000 Boz, 19.0000, 0000, 0000, 0000, 0000 Boz, 19.0000, 0000, 0000, 0000, 0000 Boz, 19.0000, 0000,	1									
Kover, per la grade de 1.1.1.6.) Sever, per la grade de 1.1.1.6.)]									

Fig.8.3.3-2 Configure startup parameters

Step3:

Declare variables in the program and map them to the IO map.

Devices 👻 🖛 🛪	EtherCAT 💮 LocalBus	K RP20C_ECT	RP20_0202IV	PLC_PRG	RP20_04000V		RP20_0400RD	2 🗑 R	P20_04	DOTC X			
- D \$\$\$\$1	Startup Parameters	Find		Filter Show all			• I Add FB	for IO Ch	hannel	* Go to Instance			
 Bevice (AK340M-0808DTN) 		- ALCONT				d I	4.1.1	-	11.5	n 1.4			
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PLC_PRG (PRG)	Information					Input CH1	%IW21	INT		Input CH1			
Task Configuration		* *				Input CH2	%IW22	INT		Input CH2			
EtherCAT_Task		8.9				Input CH3	%IW23	INT		Input CH3			
= 😂 MainTask		-											
PLC_PRG													
HSIO (HSIO)													
E0_0 (E0_0)													
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in the second se	1									Last bui	d: 🔕 0 😗 0 Precomple 🗸	C4	Protes

Fig.8.3.3-3 Mapping variable

8.3.3.2 Transfinite alarm and lost link detection method

Transfinite alarm

When the measured value exceeds the limit, the transfinite alarm is triggered, and the corresponding channel indicator light is steady red. The indicating value is the upper and lower limit of the corresponding mode. For example, if the set form is J and the actual input is 1300° C, the indicating value is 12000(corresponding upper limit is 1200° C); Set the form to J, the actual input is -300° C, then the indicated value is -2100(corresponding to the lower limit value is -210° C).

8.3.4 Cold junction compensation instruction

Internal cold junction compensation

The temperature measuring element of the cold junction is integrated in the module. When the internal compensation method is selected, the measurement result of the cold junction will be affected by the heating when the module is working. The temperature rise process is different in different environments, so the time required for the stability of the measurement value at the cold junction is also slightly different. Usually, it takes 30-45 minutes to reach the stability measurement, during this period, the temperature value of the channel measurement has a large error (the maximum error may reach 8° C). In addition, when the temperature module is configured with different types of modules, the internal cold junction value will also be affect: when the temperature module is a low heating module on both sides, the error is small after the cold junction compensation is stabilized. The maximum error of the internal compensation method (after the cold junction temperature stabilizes) is within 6 °C. Recommended usage:

- Within the operating temperature range / horizontal and upright installation direction
- Adjacent modules should be low-heating modules, such as RP20-1600DT (16-point digital input module), RP20-0400RD, RP20-0400TC or RP20-0400IV.
 Not recommended usage:
- Adjacent modules are high heating modules, such as the coupler (RP20C-ECT) itself, RP20-PW and all output types of power modules.

External cold junction compensation

When higher measurement accuracy is required, a 2-wire or 3-wire PT100 sensor can be supported by setting the channel cold compensation mode to external cold junction compensation mode and connecting an external PT100 to the compensation terminal as a cold junction external compensation sensor. The external compensation method can avoid the problem that the internal compensation needs to stabilize for a long time and the adjacent module heats up, and improve the measurement accuracy of the system.

An external junction box can be used for external compensation, placing the PT100 resistor and the cold junction of the thermocouple together and away from various hot objects can greatly reduce the measurement inconsistency caused by compensation. The best accuracy of using external compensation method can reach 0.5° C.

The external compensation wiring method are as follows:

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Fig.8.3.4-1 2-wire PT100 cold junction external compensation wiring



Fig.8.3.4-2 3-wire PT100 cold junction external compensation wiring

8.4 RP20-0400IV

8.4.1 Measurement range and measurement value

The following table shows the measurement range and expression format of the input current and voltage signal of RP20-0400IV

I: input current value V: input voltage value:

For example, if the signal form is current, if the analog value read is 9965, the actual corresponding current value is 9.965mA.

Signal form	Measurement range	Measurement value representation format
4 \sim 20mA	$3.2{\sim}21\mathrm{mA}$	L× 1000
-20 \sim 20mA	-21 \sim 21mA	1 × 1000
1~5V	0.8~5.1V	V × 1000
-10 \sim 10V	-11~11V	V × 1000

When the measured value exceeds the allowed measurement range, the fault LED of the corresponding channel will light up.

	-
Name	Represent value and corresponding meaning
	4-20mA
	-20-20mA: This option supports -20-20mA or 0-20mA input
Signal Form	1-5V
	-10-10V: This option supports -10-10V or 0-10V input
Filtoring Mode	None Filtering
Filtering Mode	Average Filtering

8.4.2 Startup parameter description

8.4.3 Use demonstration

8.4.3.1 Configuration

Step1:

Right-click RP20C_ECT , select Add device, and select RP20-0400IVto add it.



Fig.8.4.3-1 Add device

Step2:

Left click RP20-0400IV device to enter the configuration, select the startup parameters to configure the required parameters. The default configuration is shown in the figure, signal form is 4-20mA, filtering mode is average filtering.

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Fig.8.4.3-2 Configure startup parameters

Step3:

Declare variables in the program and map them to the IO map.

Devices 👻 🖣 🗙	EtherCAT CocalBus	K RP20C_ECT RP20_0	2021V PLC_PRG I RP20_0	400IV X						-
□ → ★ # # # # # # # # # # # # # # # # # #	La cara de la caractería d	End	Cilian Chan all			R fee 10 Cha	enal ->	Gala	Instance	_
E Device (AK840M-0808DTN)	Startup Parameters	THIC	Filter Show all		· Princip	ib for to cha	innet	100 10	Instance	
= III PLC Logic	Module I/O Mapping	Variable		Mapping	Channel	Address	Туре	Unit	Description	
= O Application		😑 🛅 16#1A01 0400IV (4 channels A	I module) maping							
Library Manager	Module IEC Objects	Application.PLC_PRG.AI		۰,	Input CH0	%EW12	INT		Input CH0	
PLC_PRG (PRG)		B- 🏘			Input CH1	%FW13	INT		Input CH1	
= 🧱 Task Configuration	Information	9- 1 9			Input CH2	%EW14	INT		Input CH2	
EtherCAT_Task		18 - Mp			Input CH3	%EW15	INT		Input CH3	
B 🍪 MainTask										
- 롄 PLC_PRG										
HSIO (HSIO)										
DP_0 (DP_0)										
DP_1 (DP_1)										
LocaBus (LocaBus)										
Modbus_Slave_TCP (Modbus Slave TCP ETH1										
EtherCAT (EtherCAT Master SoftMotion)										
= K RP20C_ECT (RP20C-ECT-1.1.0.6)										
RP20_0202IV (RP20-0202IV(2-chann										
RP20_04001V (RP20-04001V(4 chann										
- 2 SoftMotion General Axis Pool										
							Parat M	anning	Aburana um distancial abilias	
							NUSCE PI	apping	Anways up vace variables Use parent device setting	~
		🍫 = Create new variable 🦷	Map to existing variable							
The point of the p										



8.4.3.2 Transfinite alarm and lost link detection method

Transfinite alarm

When the measured value exceeds the limit, the transfinite alarm is triggered, and the corresponding channel indicator light is steady red. The indicating value is the upper and lower limit of the corresponding mode. For example, if the set form is 4-20mA and the actual input is 30mA, the indicating value is 21000(corresponding upper limit is 21mA); Set the form is 4-20mA , the actual input is 2mA, then the indicated value is 3200(corresponding to the lower limit value is 3.2mA).

Lost link detection

When measuring the lost link , for 4-20mA and 1-5V mode, the lost link detection is triggered, and the corresponding channel indicator light is steady red with an indicator value of -32768.

8.5 RP20-0004IV

8.5.1 Measurement range and measurement value

The following table shows the output range and output value format of RP20-0004IV I: Actual current value V: Actual voltage value:

For example, if the signal form is current, if the analog value read is 9965, the actual corresponding current value is 9.965mA.

Signal type	Measurement range	Measurement value representation format
4-20mA	3.92-20.4mA	L× 1000
0-20mA	0-20.4mA	I × 1000
1-5V	0.96-5.1V	V × 1000
-10-10V	-10.2-10.2V	V × 1000

Note: If the output value specified in the user program exceeds the upper and lower limits of the selected range, the output signal will remain at the upper and lower limits.

8.5.2 Startup parameter description

Name	Represent value and corresponding meaning
	4-20mA
Signal Form	0-20mA
Signal Form	1-5V
NameRepreseSignal Form4-20mA0-20mA1-5V10-10V: This opticStopmodeKeep Current ValueAfter Lost LinkRetain Preset: OutStopvalueOutput value whenAfter Lost LinkStopmode After Lost	-10-10V: This option can support -10-10V or 0-10V configuration
Stopmode	Keep Current Value: Keep the current output value when stopped
After Lost Link	Retain Preset: Output the set value when stopped
Stopvalue	Output value when lost link
After Lost Link	Stopmode After Lost Link takes effect when it is set to Retain Preset.

8.5.3 Use demonstration

Step1:

Right-click RP20C_ECT , select Add device, and select RP20-0004IVto add it.

Image: Second Secon	The second secon					
Inclusion	E TH Device (AK840M-0808DTN)	Startup Para	Name RP20_0004TV_1			
• Andrease • Andrease <td>B BA PLC Logic</td> <td></td> <td>Action</td> <td></td> <td></td> <td></td>	B BA PLC Logic		Action			
	- O Application	module 1/0 f	Append device O Insert device O Plug device O Update device			
Image: space properties of the space proper	- MI Library Manager	Module IEC				
Image: Start Configuration Image: Start C	PLC PRG (PRG)		String for a full text search Vendor <all vendors=""></all>			
	E Task Configuration	Information	Name	Vendor	Version	Description
<pre></pre>	S EtherCAT_Task	-	· I Feldbuses			
Image: Control (Control (C	😑 🚯 MainTask		B and EtherCAT			
Image: Display in the second of the secon	DLC_PRG		a and Module			
P go	HSIO (HSIO)		RP20-0004EV(4-channel AO module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0004EV(4-channel AD module)
<pre>Image: Description of the server of the</pre>			RP20-0008DR(8 channels DR module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0008DR(8 channels DR module)
Image: Section (advanced control) Figure 2000000000000000000000000000000000000	- @ EP_1 (EP_1)		RP20-00 16DTN (16 channels DO(NPN) module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0016DTN(16 channels DO()/PN) module)
Image: Stand Stan	- 🚮 LocalBus (LocalBus)		RP20-0016DTP(16 channels DO(PNP) module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0016DTP(16 channels DO(PNP) module)
Image: State Stat	Modbus_Slave_TCP (Modbus Slave TCP ETH	4	RP20-0202IV(2-channel AI and 2-channel AO module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0202IV(2-channel AI and 2-channel AO module)
Set Set Set Set Set Set Set Set Set	EtherCAT (EtherCAT Master SoftMotion)		RP20-0400IV(4 channels AI module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-04000V(4 channels AI module)
P30_03200 (P50-2000)(C4 arms) (Tmode) P30_05200 (P50-2000)(C4 arms) (Tmode) Ether(2 Tmode reported frame pitce fr	K RP20C_ECT (RP20C-ECT-1.1.0.6)		RP20-0400RD(4 channels RD module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0400RD(4 channels RD module)
with y state (with y with	RP20_0202IV (RP20-0202IV(2-chan	v	 RP20-0400TC(4 channels TC module) 	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.aml Device: RP20-0400TC(4 channels TC module)
Image: Status	- B RP20_0400IV (RP20-0400IV(4 chan	n	RP20-0808DTP(8-channel DI and 8-channel DO(PNP) module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-0808DTP(8-channel DI and 8-channel DO(PNP) module)
Image: State Stat	- B RP20_0400RD (RP20-0400RD(4 cha	2f	RP20-1600DT(16 channels DI module)	Kinco Electric (Shenzhen) Ltd.	0	EtherCAT Module imported from Slave XML: RP20_ECT_1.1.0.6.xml Device: RP20-1600DT(16 channels DL module)
	3 SoftMotion General Axis Pool		Mendor Kinco Flastric (Stepshan) Ltd			
Rest Mapping Alwys update windoler Use parent device setting v			Categories: Module Version: 0 Order Namber: RP20:00-01V Description: EfterCAT Module inported from Slave XML: RP20_ECT_1.1.0.6	5.xml Device: RP20-0004Ev(4-chan	nel AO module	·
Vige - Create new verifielite Tige - Macto metring variable			Gregories Holds Version Version Order humber 192 0000 Version and extended humber 192 Version Order humber 192 0000 Version and extended humber 192 Version Ver	Sumi Device: RP20-00040V(4-charu 2en.)	nel AO moduli) Mdd Dwwa Core
A second			Categories Holds Versite 3 Dieter Handlers (25 00 007) Dieter Handlers (25 00 007) Beortyforden stiller (25 00 007) Provide steller (25 00 007) (25 00 007) (25 000 007) (25 0000 007) (25 00000000000000000000	5.xml Device: 8720-00040(4-chan	nel AO module) Add Derver Ore Dere Monton Alexa and desaultion insure desaultion insure of the section of t
And A Date in the second se			Compares Holds Version 0	5.ani Device: 8920-000417(4-chan	nel AO moduli) Add Device Core Reset Magning - Always update which is use parent device acting

Fig.8.5.3-1 Add device

<u>Step2</u>:

Left click RP20-0004IV device to enter the configuration , select the startup parameters to configure the required parameters. The default configuration is shown in the figure, signal form is 4-20mA, Stopmode After Lost Link is keep current value.

Check (MAGN440000Th) Check (MAGN44000Th) Check (MAGN44000Th) Shine F Check (MAGN44000Th) Shine F Check (MAGN44000Th) Shine F Check (MAGN44000Th) Check (MAGN44000Th) Check (MAGN4400Th) Check (MAGN4400Th)	EtherCAT 🔀 LocalBus K R	200_6CT	20_0202IV	04000V	🗑 RP20_	0400TC 🛛 🗑 RP2	0_0004IV ×		
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Control (1997) Control	le I/O Mapping Line	Index:Subindex	Name	Value	Bit Length	Abort on Error	Jump to Line on Error	Next Line	Comment
Comparison of the second	1	16#8000:16#01	AO CH0 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH0 Signal Form
(a) R.C.PR6 (PR6) (b) Configuration (c) Effect Critication (c) Effect (c) Effect Critication (c) Effect (c) Effect Critication (c) Effect (c) Effect	le IEC Objects 2	16#8000:16#02	AO CH1 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH1 Signal Form
	- 3	16#8000:16#03	AO CH2 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH2 Signal Form
	nation - 4	16#8000:16#04	AO CH3 Signal Form	4mA~20mA(4000~20000)	8			0	AO CH3 Signal Form
	- 5	16#8000:16#05	AO CH0 Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CHO Stopmode After Ethe
(4) (C2,96 (407)	- 6	16#8000:16#06	AO CH1 Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CH1 Stopmode After Ethe
	- 7	16#8000:16#07	AO CH2 Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CH2 Stopmode After Ethe
Exp., (pp. 5) Exp., (- 8	16#8000:16#08	AO CH3 Stopmode After EtherCAT Lost Link	Keep Current Value	8			0	AO CH3 Stopmode After Ethe
	- 9	16#8000:16#09	AO CH0 Stopvalue After EtherCAT Lost Link	0	16			0	AO CHO Stopvalue After Ethe
Looke (Looke) Looke (Looke) Looke (Looke) Looke (Looke) Control (Looke) Control (Looke) Control (Looke) Control (Looke) Song (Control (Looke) Song (Control (Looke))	- 10	16#8000:16#0A	AO CH1 Stopvalue After EtherCAT Lost Link	0	16			0	AO CH1 Stopvalue After Ethe
● Modul, Siles, TP Of Modul Siles TP Of Thi ● Effect() ● Effect() ● Status ●	- 11	16#8000:16#08	AO CH2 Stopvalue After EtherCAT Lost Link	0	16			0	AO CH2 Stopvalue After Ethe
Image: Direct/CI Effect/CI Mealury Software Image: Ministry CI Effect/CI Effe	- 12	16#8000:16#0C	AO CH3 Stopvalue After EtherCAT Lost Link	0	16			0	AO CH3 Stopvalue After Ethe

Fig.8.5.3-2 Configure startup parameters

<u>Step3</u>:

Declare variables in the program and map them to the IO map.

A ##81						111			_		_
E B Device (AK840M-0808DTN)	Startup Parameters	Find		Filter Show all		• - + Ad	d FB for IO C	hannel 7	Got	to Instance	
P D PLC Logic	Module I/O Mapping	Variable			Mapping	Channel	Address	Туре	Unit	Description	
Application		8 16#1604 0004	EV(4-channel AO module) maping							
Library Manager	Module IEC Objects	* 🍫 Application	.PLC_PRG.AO		۰.	Output CH0	%QW10	INT		Output CH0	
PLC_PRG (PRG)		9 · *•				Output CH1	%QW11	INT		Output CH1	
ask Configuration	Information	8.50				Output CH2	%QW12	INT		Output CH2	
BEtherCAT_Task		· · · · ·				Output CH3	%QW13	INT		Output CH3	
🖹 🎲 MainTask											
- @] PLC_PRG											
HSIO (HSIO)											
- BP_0 (BP_0)											
- 🔛 EIP_1 (EIP_1)											
- G LocalBus (LocalBus)											
Modbus_Slave_TCP (Modbus Slave TCP ETH1											
= 🔛 EtherCAT (EtherCAT Master SoftMotion)											
K RP20C_ECT (RP20C-ECT-1.1.0.6)											
- BP20_0202IV (RP20-0202IV(2-chann											
- 🗐 RP20_0400IV (RP20-0400IV(4 chann											
- B RP20_0400RD (RP20-0400RD(4 char											
- 😭 RP20_0400TC (RP20-0400TC(4 chan											
RP20_0004IV (RP20-0004IV(4-chan)											
SoftMotion General Axis Pool											
								Peret N	anning	Always undategraphies. Use second de los estilios	
								- COPEC IN	opping	a conservation of the secting	

Fig.8.5.3-3 Mapping variable

9 Product dimension



Fig.9-1 RP20 series I/O modulesAssembly dimension drawing

The above product dimension is applicable to the following models: RP20-0202IV, RP20-0400RD, RP20-0400TC, RP20-0400IV and RP20-0004IV.

10 Installation criteria

10.1 Installation dimension



Fig.10.1-1 Installation dimension

The above installation dimension is applicable to the following models: RP20-0202IV, RP20-0400RD, RP20-0400TC, RP20-0400IV and RP20-0004IV.

10.2 Installation method

10.2.1 DIN rail dimension

It is recommended to use a standard 35mm wide, 1mm thick DIN rail for assembly. The following two heights are commonly used.



Fig.10.2-1 Standard DIN Rail

Notes: When the rail thickness <1mm, the latch may not lock securely, causing looseness. When rail thickness >1mm, the latch may not close properly, and forcing it to lock could damage the module.

10.2.2 Module assembly

Modules are effectively connected through the positional relationship between the top rail and the bottom rail.



Fig.10.2-2 Module assembly

When assembling modules, align the top and bottom rails of the module to be connected with the rails of the target module. Simultaneously clip them onto the rails, then push the module vertically until it is fully inserted and aligned.



Fig.10.2-3 Module assembly

To secure the module onto the DIN35 rail, first pull the spring lever at the top of the module upward. Then, clip the module vertically onto the rail. Release the lever, and the locking mechanism will automatically snap back to secure the module in place.



Fig.10.2-4 Secure the module onto the DIN35 rail

After all modules are assembled, use rail fixing blocks that are compatible with the rail size to secure the modules in their intended positions on the rail. This prevents improper displacement during mechanical vibrations or transportation, ensuring system safety.





During disassembly, first loosen the rail fixing block, then use a flathead screwdriver or other tools to lift the spring-loaded self-locking latch on top of the module. Afterward, remove the module from the rail.





Notes: Rail fixing blocks must match the size of the DIN rail. Customers should purchase the blocks separately based on their specific requirements.

10.2.2 Connector Assembly

When connector disassembly:





7

When connector assembly:



Fig.10.2-8 connector assembly

The module terminals (front connection area) are equipped with cable fixing points. Using accessories such as cable clamps or straps, I/O cables can be secured, making cable management easier and more organized.



Fig.10.2-9 Cable management

11 Getting start

11.1 Device description file acquisition

The I/O modules do not have separate device description files. Instead, they are integrated into the device description file of the RP20 series coupler or the device installation package of the AK8X0 series PLC. Please visit the Kinco official website <u>https://www.kinco.cn/</u>(CN), <u>https://en.kinco.cn/</u> (EN) or contact Kinco's official customer service department to obtain the latest device description files.

11.2 Install device description file

11.2.1 When Used with RP20 Coupler

11.2.1.1 Installation

This chapter demonstrates the device installation process using the standard CoDeSys-style interface (CoDeSys V3.5.19) and RP20 EtherCAT coupler.

<u>Step 1</u>: Open CoDeSys V3.5.19, locate and open the "Device Repository" under the "Tools" menu.

Untitled4.project* - CODESYS		
File Edit View Project Build Online Debug ⓐ ⓐ ⓐ ⓑ	Tools Window Help CODESYS Installer Library Repository Device Repository 	e:
Untitled4 Device (AK840M-0808DTN/P) Device (AK840M-0808DTN/P) PLC Logic PLC_PRG (PRG) PLC_PRG (PRG) Task Configuration EtherCAT_Task EtherCAT_Task PLC_PRG PLC_PRG SoftMotion_PlanningTask HSIO (HSIO) EXP_0 (EXP_0) EXP_0 (EXP_0)	Image: Style Repository Scripting Edge Gateway Automation Server Miscellaneous	rk

Fig. 11.2.1-1 Open "Device Repository"

<u>Step2</u>: Select the "Install.." option, locate the target file in the opened directory, and open it.

cation	System Reposito	ystem Repository ::ProgramData\CODESYS\Devices) re Descriptions Itext search Vendor <all vendors=""> Vendor Version Description Ianeous wees levices i Install Device Description i Install Device Description i Install Quite Description i Install Device Description i Install Quite Description i Install Device Descriptio</all>		 Edit Locations
	(C:\ProgramDat	(CODESYS\Devices)		
				10
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ung ior	a fuil text search	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>		
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E 📆 PI	LCs	$\leftrightarrow \rightarrow \checkmark \uparrow$ $\simeq 2024-12 \rightarrow RP20 \lor C$	在 RP20 中搜索	Q
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			1	
			<u> </u>	
		文件名(N): RP20 ECT 1.1.0.6	EtherOAT ESI (*.xml)	~
				Cancel
				Calification of the second sec

Fig. 11.2.1-2 Select file and install





Fig. 11.2.1-3 Wait for the installation to complete

11.2.1.2 Configuration

This section demonstrates the configuration process for RP20 series I/O modules using the RP20 series EtherCAT coupler as an example. The RP20 series offers 2 configuration methods:

Method 1: Configuration via scanning. This method requires an actual slave device to be connected.



Fig. 11.2.1-4 Scan for device



Fig. 11.2.1-5 Copy all devices to project

<u>Method 2</u>: Configuration by manually adding modules. For this method, the order of module addition must match the actual connection sequence of the modules; otherwise, communication errors will occur.



Fig. 11.2.1-6 Add the coupler



Fig. 11.2.1-7 Add modules

11.2.2 When used with AK840M Controller

11.2.2.1 Configuration

Configure under "localbus" by manually adding modules. This method requires manually adding I/O modules, ensuring the addition sequence matches the actual module connection sequence. Otherwise, communication errors may occur.

RP20 series analog I/O module user manual



Fig. 11.2.2-1 Configure under "localbus"

Devices 👻 🖗	X Device RP20_000	4IV X						
Support Support	R22-00417 Parameters R22-00417 Via Mapping R22-00417 Via Mapping R22-00417 Via Coljects R410 Add Device Name R220050000 Action	Parameter M Module Code A O CH3 Signal Form	Type BYTE Enumeration of BYT Enumeration of PT Enumeration of BYT	E 4m E 4m E 4m	Value 16#20 A~20mA(4000~20000) A~20mA(4000~20000) A~20mA(4000~20000) A~20mA(4000~20000)	Default Value Unit 16#20 4mA~20mA(4000~20000) 4mA~20mA(4000~20000) 4mA~20mA(4000~20000) 4mA~20mA(4000~20000)	Description AO CHO Signal Form AO CH1 Signal Form AO CH2 Signal Form AO CH3 Signal Form	> >
∭ EP 0.0 (EP p.0) ∭ EP 0.0 (EP p.0) ∭ EP 0.0 (EP p.0) ∭ EP 0.0 (coaBus ∭ EP 0.0 (coaBus <td>Append device Insert device String for a full text search Name @device</td> <td>Plug device Update device Vendor <all td="" vendor:<=""><td>s> Vendor</td><td>Version</td><td>Description</td><td></td><td></td><td></td></all></td>	Append device Insert device String for a full text search Name @device	Plug device Update device Vendor <all td="" vendor:<=""><td>s> Vendor</td><td>Version</td><td>Description</td><td></td><td></td><td></td></all>	s> Vendor	Version	Description			
	Control C	moduke) moduke) OO(PRP) moduke) OO(PRP) moduke) moduke) moduke) araf & shamel DO(PRP) moduke) araf & shamel DO(PRP) moduke) ar	KDICO Electric (Shendher) Ltd. (KHCO Electric (Shendher) Ltd. (SHCO Electric (Shendher) Ltd.	1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4 1.0.0.4	4-channel AD module 8-channel DR module 16-channel DO(PR) m 2-channel AI and 2-ch 4-channel AI amodule 4-channel RD module 4-channel RD module 8-channel DI and 8-ch 16-channel DI and 8-ch	odule odule annel AD module annel DO(HP) module		
	Append selected device as last chi Localitus (You can select another target no	d of i.de in the navigator while this winc	dow is open.)				Add Device	Close

Fig. 11.2.2-2 Add I/O devices to the slave station list in actual order

11.2.2.2 Usage Demonstration

<u>Step 1</u>: Variable mapping

<u>Method 1</u>: Address mapping (Byte /Bit). Map the address of the corresponding I/O channel to the specific variable or use the channel address directly when the variable is defined.



Fig. 11.2.2-3 "Module I/O Mapping"



Fig. 11.2.2-4 Map the desired address to a custom variable

<u>Method 2</u>: Direct address mapping (Byte /Bit). On the" Module I/O Mapping" page, map the I/O channel address to a specific variable.

rs → ‡ X	Device RP20_	0004IV X PLC_PRG							
Untitled7	RP20-0004IV Parameters	Find	Filter She	ow all			Add	FB for IO Channel.	. → Go to
	RP20-0004IV I/O Mapping RP20-0004IV IEC Objects Status	Variable	Mapping	Channel Analog Output CH0 Analog Output CH1 Analog Output CH2	Address %QW8 %QW9 %QW10	Type INT INT INT	Unit	Description Analog Output CH0 Analog Output CH1 Analog Output CH2	×
Image: Sec: Sec: Sec: Sec: Sec: Sec: Sec: Se		Text Search Callegonies	Name Application Application	buff Interfaces bais tDriverUb	Type Applicatio PROGRA INT Library Library VAR-QC Library Library Library Library	n V	Add %۵	Iress Or Brealpoin CRA Devic ICOrvEth SM2_Base SM2_Rath SM2_Can SM2_Tran.	rigir t Loş Inte er CA ç. 4 b. 4 Build sforn
		Structured view				Filte	er None		~
		Documentation		🐻 Insert with	arguments	. 1	nsert with	namespace prefix	
		AQ_buffAT %QW8: INT(VAR)						OK Cance	•

Fig. 11.2.2-5 Map variables in Byte format on the Module I/O Mapping page

Step 2: Configure startup parameters

On the parameter page of the corresponding module, set startup parameters. As shown in the figure, default parameters of RP20-0004IV:

.ces	Device RP20_00	04IV X 🕂 PLC_PRG					
Linbled7 Topology Device (AK8+0M-0808DTN/P) Device (AK8+0M-0808DTN/P)	RP20-0004IV Parameters	Parameter	Туре	Value 16#20	Default Value	Unit	Description
Application	RP20-0004IV I/O Mapping	AO CH0 Signal Form	Enumeration of BYTE	4mA~20mA(4000~20000)	4mA~20mA(4000~20000)		AO CH0 Signal Form
Library Manager	PP20-0004TV IEC Objects	AQ CH1 Signal Form	Enumeration of BYTE	4mA~20mA(4000~20000)	4mA~20mA(4000~20000)		AO CH1 Signal Form
B D D d y Manager	N 20 000 IIV ILC Objects	AO CH2 Signal Form	Enumeration of BYTE	4mA~20mA(4000~20000)	4mA~20mA(4000~20000)		AO CH2 Signal Form
= MA Task Configuration	Status	AO CH3 Signal Form	Enumeration of BYTE	4mA~20mA(4000~20000)	4mA~20mA(4000~20000)		AO CH3 Signal Form
B EtherCAT Tack		AO CH0 Stopmode After Lost Link	Enumeration of BYTE	Keep Current Value	Keep Current Value		AO CHO Stopmode After Lost
B S MainTask	Information	AO CH1 Stopmode After Lost Link	Enumeration of BYTE	Keep Current Value	Keep Current Value		AO CH1 Stopmode After Lost
B) PLC PRG		AO CH2 Stopmode After Lost Link	Enumeration of BYTE	Keep Current Value	Keep Current Value		AO CH2 Stopmode After Lost
HI HSTO (HSTO)		AO CH3 Stopmode After Lost Link	Enumeration of BYTE	Keep Current Value	Keep Current Value		AO CH3 Stopmode After Lost
- (FI EXP 0 (EXP 0)		AO CH0 Stopvalue After Lost Link	INT	0	0		AO CHO Stopvalue After Lost
- III EXP 1 (EXP 1)		AO CH1 Stopvalue After Lost Link	INT	0	0		AO CH1 Stopvalue After Lost
= fil LocalBus (LocalBus)		AO CH2 Stopvalue After Lost Link	INT	0	0		AO CH2 Stopvalue After Lost
RP20 0004IV (RP20-0004IV(4-channel AO module))		🦾 🌵 AO CH3 Stopvalue After Lost Link	INT	0	0		AO CH3 Stopvalue After Lost
Pro 20007 (P220 0007(4 damet & Model) Pro 20007 (P220 0007(4 damet & Model) Pro 20007 (P220 0007(4 damet & Model) Pro 20007 (P220 00007(4 damet & Model) Pro 200007 (P220 00007(4 damet & Model) Pro 200007(4 damet & Model) Pro 200007 (P220 00007(4 damet & Model) Pro 200007(4 damet & Model) Pro							

Fig. 11.2.2-6 Set startup parameters

12 Error Diagnostics

When the module's Err indicator (red) lights up, it indicates a fault in the module. The fault code can be obtained through the online monitoring interface of the master station software. The object dictionary for the fault code is 0xAXXX.

The corresponding module object dictionary index is related to the module's position under the coupler ($n=1^{-16}$). The relationship between the index and the position is as follows:

 $Index = 0xA000 + 0x10 \times (n-1)$

For example, if three modules are connected in the "Online CoE" interface in CoDeSys (Fig. 12-1), the corresponding fault indices would be: 0xA010, 0xA020, 0xA030.

EthorCAT /EthorCAT Master CoftMation)	-	10#0020.10#00	1000D1 moutle configure parameters		
		16#A000:16#00	0016DTP Diagnosis information		
K RP20C_ECT (RP20C-ECT-1.1.0.6)		:16#01	0016DTP Moudle ID	RO	USINT
RP20_0016DTP_1 (RP20-0016DTP(16-channel 0		:16#02	0016DTP Moudle SW Version	RO	USINT
RP20_0808DTP_1 (RP20-0808DTP(8-channel		:16#03	0016DTP Moudle HW Version	RO	USINT
RP20_1600DT_1 (RP20-1600DT(16-channel DI)	18	:16#04	0016DTP Moudle Diagnotics Code	RO	USINT
CANbus (CANbus)		16#A010:16#00	0808DTP Diagnosis information		
. CANopen_Manager (CANopen_Manager)		:16#01	0808DTP Moudle ID	RO	USINT
SoftMotion General Axis Pool		:16#02	0808DTP Moudle SW Version	RO	USINT
		:16#03	0808DTP Moudle HW Version	RO	USINT
		:16#04	0808DTP Moudle Diagnotics Code	RO	USINT
		16#A020:16#00	1600DT Diagnosis information		
		:16#01	1600DT Moudle ID	RO	USINT
		:16#02	1600DT Moudle SW Version	RO	USINT
	1	:16#03	1600DT Moudle HW Version	RO	USINT
		:16#04	1600DT Moudle Diagnotics Code	RO	USINT

Fig. 12-1 "CoE Online" Tag

Object Dictionary Index Definition				
0xA000+0x10*(n-1)				
Sub-index	Туре	Definition		
01	UINT8	Module ID		
02	UINT8	Module SW Version / Software version		
03	UINT8	Module HW Version / Hardware version		
04	UINT8	Module Diagnosis information / Error code		

The object dictionary index $0 \times A000 + 0 \times 10 \times (n-1)$ has a specific entry for the module error code at 0x04. Below are some common error codes and their meanings:

Code	Definition
0x01	Error caused by the master device. Please check the master device's status and perform fault diagnosis (refer to the corresponding user manual of the master device).
0x02	Error caused by the module itself.
0x03	The module ID returned by the module is invalid. Please check the module configuration and module position.