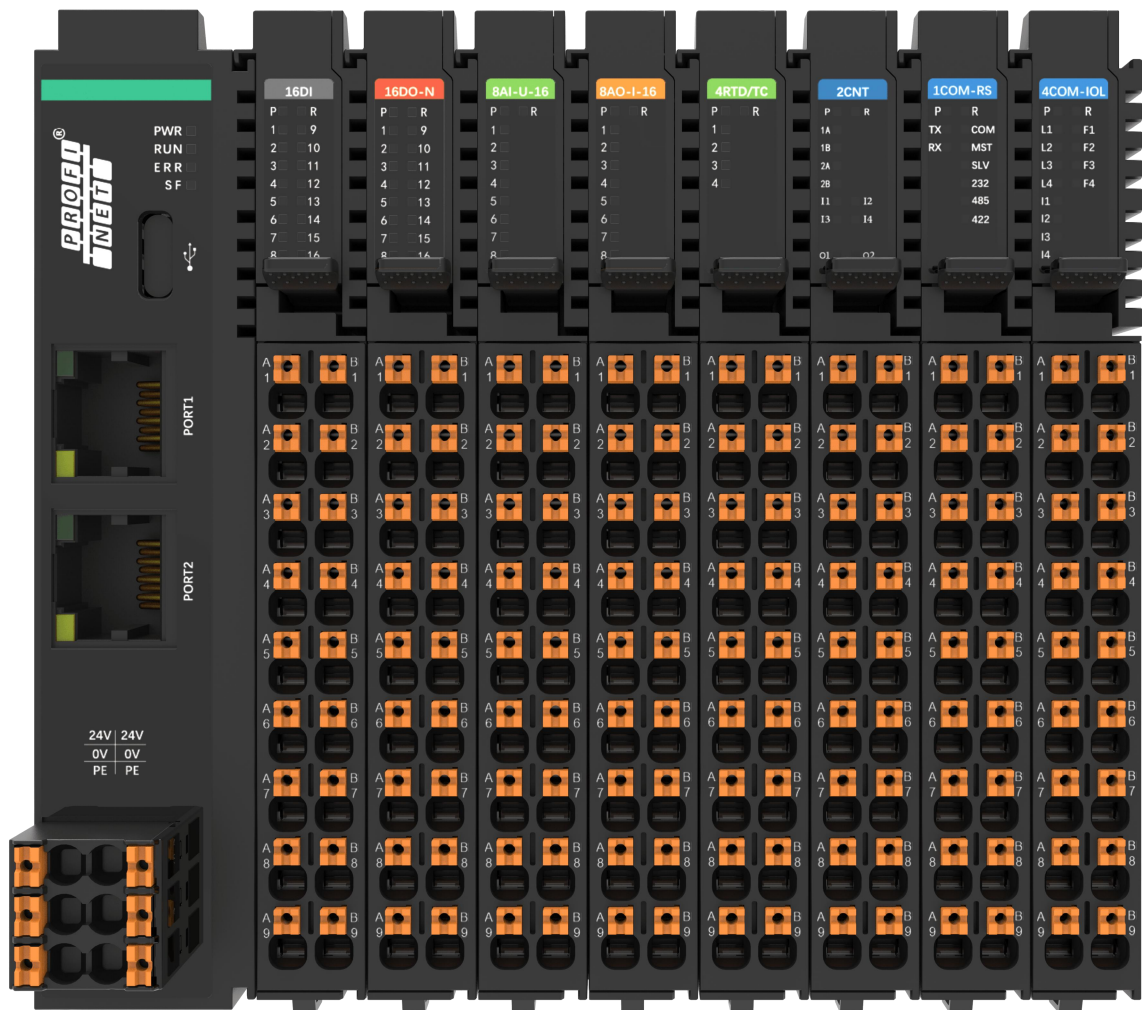


DF30-C-PN-RT

User Manual



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1 Preface

■ Document Overview

➤ The DF30-C-PN-RT communication interface module (hereinafter referred to as this module) functions as a PROFINET slave connected to the PROFINET network. This module enables the expansion of local modules including digital signals, analog signals, temperature signals, pulse signals, and communication gateways.

This manual presents the product's basic information, electrical installation, programming examples, mechanical installation, and related topics.

■ Compliance Standards

Refer to the table below for relevant certification categories, directives, and standards. The validity of certifications shall be determined by the product nameplate.

Certification Name	Directive Name		Compliance Standards
CE Certification	EMC Directive	2014/30/EU	EN 61131-2
	LVD Directive	2014/35/EU	EN 61010-1 EN 61010-2-201
	RoHS Directive	2011/65/EU amended by (EU) 2015/863	EN IEC 63000

■ Additional Information

■ Version Change Log

Revision Date	Released Version	Change Description
2025-02-28	2025-2-28	First Edition of the Manual
2025-09-01	2025-09-04	Additional Model Description: Sections 5.8 – 5.17

■ Manual Acquisition Information

This manual is not shipped with the product. To obtain an electronic PDF version, please use one of the following methods:

■ Warranty Statement

Under normal conditions, if the product malfunctions or is damaged, warranty service is provided within the warranty period (refer to the order form for the warranty duration). Repair fees apply after the warranty period expires.

During the warranty period, repair fees will be charged for product damage caused by the following circumstances.

- Damage resulting from operation of the product contrary to the instructions specified in the manual.
- Product damage caused by fire, flooding, or abnormal voltage.
- Product damage resulting from the use of this product for unintended functions.
- Product damage caused by exceeding the product's specified usage parameters.
- Secondary product damage caused by force majeure events (natural disasters, earthquakes, lightning).

Service fees are calculated according to the manufacturer's unified standards; in the event of a contract, the contract shall take precedence.

For detailed warranty information, please refer to the Product Warranty Card.

2 Safety Precautions

■ Safety Statement

➤ This chapter explains the safety precautions that must be observed when using this product. Before using this product, please read the User Manual carefully and fully understand the relevant safety precautions. Failure to comply with the provisions outlined in the Safety Precautions may result in death, serious injury, or equipment damage.

➤ The 'Danger,' 'Warning,' and 'Caution' statements in this manual do not represent all safety requirements and serve only as supplements to the complete Safety Precautions.

➤ This product must be operated within an environment that complies with the design specifications; otherwise, malfunctions may occur. Functional abnormalities or component damage caused by noncompliance with relevant regulations are not covered under the product warranty.

➤ Our company shall bear no legal liability for personal injury, property damage, or other losses resulting from failure to comply with this manual or improper operation of the product.

■ Safety Level Definition

Danger: Indicates that failure to comply with the specified procedures will result in death or serious bodily injury.

Warning: Indicates that failure to follow instructions may result in death or serious bodily injury.

Attention: Indicates that failure to follow instructions may result in minor bodily injury or equipment damage.

■ Safety Precautions

➤ In this manual, product illustrations sometimes show the product with its enclosure or safety cover removed to reveal detailed components. When using this product, always ensure the enclosure or protective cover is properly installed and operate in accordance with the User Manual.

➤ Product illustrations in this manual are for reference only and may differ slightly from the product you ordered; please refer to the actual product received.

➤ Operators must implement mechanical protective measures to ensure personal safety. Please wear and use the necessary protective equipment, such as safety shoes, protective clothing, safety glasses, protective gloves, and sleeves.

Unpacking Inspection

Attention:

- If any damage, rust, signs of prior use, or other issues are found on the product or its accessories during unpacking, do not install!
- If water ingress, missing components, or damaged parts are discovered inside the product during unpacking, do not install!
- Please carefully verify the packing list. If the items do not correspond to the product description, do not install!
- Before unpacking, inspect the external packaging for any damage, wetness, moisture, deformation, or other anomalies.
- Please open the packaging in the specified order; vigorous impacts are strictly prohibited!
- Upon unpacking, inspect the device and accessories for any surface damage, corrosion, or dents.
- After unpacking, carefully check the packing list to verify that the device, accessories, and documentation are complete.

Storage and Transportation

Attention:

- When handling the product, always lift and place it gently. Be aware of objects underfoot to prevent tripping or dropping, which may cause injury or product damage!
- When manually handling the product, be sure to firmly grasp the product housing to prevent any components from falling off, which could cause injury!
- Strictly comply with the product's specified storage and transportation conditions; otherwise, the product may be damaged.

- Avoid storing and transporting the product in environments exposed to water splashes, rain, direct sunlight, strong electric fields, strong magnetic fields, or severe vibrations.
- Do not store the product for more than 3 months; if extended storage is necessary, apply enhanced protection measures and conduct required inspections.
- Ensure the product is securely packaged before vehicle transport; for long-distance transport, use a sealed container.
- It is strictly forbidden to transport this product together with equipment or items that may adversely affect or damage it.

During installation

Danger:

- Only personnel trained in electrical equipment and possessing electrical knowledge are authorized to operate. Operation by unqualified personnel is strictly prohibited!

Warning:

- Before installation, thoroughly read the product User Manual and Safety Precautions!
- Do not install this product in locations subjected to strong electric fields or strong electromagnetic interference!
- Before commencing installation procedures, ensure the mechanical strength of the installation site is adequate to support the device weight; otherwise, mechanical hazards may occur.
- During installation procedures, avoid wearing loose clothing or accessories to prevent the risk of electric shock!
- When installing the product in an enclosed environment (such as within a cabinet or chassis), ensure adequate cooling using cooling devices (such as fans or air conditioning) to comply with installation environment requirements; failure to do so may result in product overheating or fire.
- Unauthorized modification of this product is strictly prohibited!
- When the product is installed inside a cabinet or terminal device, the cabinet or device must be equipped with appropriate protective enclosures, including fireproof, electrical, and mechanical protection. The protection level shall comply with relevant IEC standards

and applicable local laws and regulations.

- When installing equipment that generates strong electromagnetic interference, such as transformers, install shielding protection devices to prevent product malfunction.
- Please install the product on metal or other flame-retardant materials. Do not allow flammable substances to contact or adhere to the product, as this may create a fire hazard.

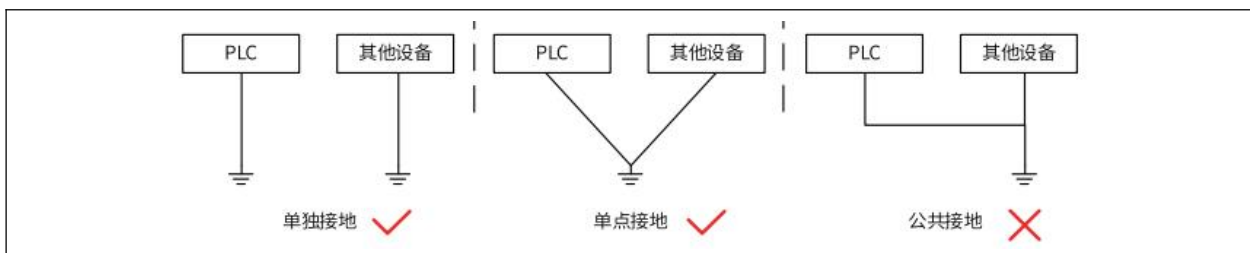
Attention:

- During installation procedures, cover the top of the product with cloth or paper to prevent metal shavings, oil, water, or other foreign matter from entering the product during drilling, which could cause malfunction. After completing the work, please remove the covering to prevent blockage of ventilation holes, which may impair heat dissipation and cause abnormal heating of the product.
- Resonance may occur when changing the speed of machinery that normally operates at a constant speed. Installing vibration-damping rubber under the motor frame or utilizing the vibration suppression function at this stage can effectively mitigate resonance.

During wiring

Danger:

- Strictly prohibit non-professional personnel from performing equipment installation, wiring, maintenance, inspection, or component replacement!
- Disconnect the power supply to all equipment before wiring. After power is disconnected, residual voltage remains in the internal capacitors of the equipment. Wait at least the duration specified on the product warning label before performing wiring or any other operations. Measure the DC voltage of the main circuit and ensure it is below the safe voltage level; otherwise, there is a risk of electric shock.
- Perform wiring, disassembly of the product cover, or touching of the circuit board only with the power supply disconnected; otherwise, risk of electric shock exists.
- Ensure proper grounding of the equipment and product to prevent the risk of electric shock. Grounding should be performed using isolated grounding or single-point grounding; common grounding is not permitted.



Warning:

- Do not connect the input power supply to the output terminal of the equipment or product, as this can cause equipment damage and may result in fire.
- When connecting the drive equipment to the motor, ensure that the product and motor terminal phase sequences precisely correspond to prevent reverse motor rotation.
- Cables used for wiring must comply with the specified conductor cross-section and shielding requirements. The shielding layer of shielded cables must be reliably grounded at one end only.
- After wiring is completed, ensure all cables are correctly connected and no screws, washers, or exposed wires remain inside the product; otherwise, there is a risk of electric shock or product damage.

Attention:

- Adhere to Electrostatic Discharge (ESD) prevention protocols and wear an anti-static wrist strap during wiring and related operations to prevent damage to the device or internal circuits.
- When wiring control circuits, use double-stranded twisted shielded cables, grounding the shield to the product's grounding terminal to prevent abnormal product operation.

Power-On

Danger:

- Before powering on, verify that the product is correctly installed, wiring is secure, and the motor device is authorized for restart.
- Before powering on, please verify that the power supply complies with the product specifications to prevent product damage or fire hazards.
- Do not open the product cabinet door or protective cover, touch any wiring terminals, or disassemble any devices or components of the product while it is energized, as this poses

a risk of electric shock.

Warning:

- After the wiring operation and parameter setting are completed, please conduct a test run of the machine to confirm that the machine can operate safely, otherwise it may cause injury to personnel or damage to the equipment.
- Before powering on, make sure that the rated voltage of the product is the same as the power supply voltage. If the power supply voltage is used incorrectly, there is a risk of fire
- Before powering on, make sure that there are no people around the product, motor and machinery, otherwise it may cause injury or death.

Runtime**Danger:**

- It is strictly forbidden for non-professionals to operate the product, otherwise there is a risk of injury or death!
- It is strictly forbidden to touch any terminal block of the equipment and disassemble any device or part of the product in the operating state, otherwise there is a risk of electric shock!

Warning:

- It is strictly forbidden to touch the device shell, fan or resistor to test the temperature, otherwise it may cause burns!
- During operation, avoid other items or metal objects falling into the equipment, otherwise it may cause fire or product damage!

Maintenance**Danger:**

- Strictly prohibit non-professional personnel from performing equipment installation, wiring, maintenance, inspection, or component replacement!
- It is strictly forbidden to maintain the equipment in the state of power, otherwise there is a risk of electric shock!

- After cutting off the power to all devices, wait at least for the time specified on the warning label on the product before performing equipment maintenance.
- When using a PM motor, an induced voltage is generated on the motor terminals during motor rotation even if the power to the product is turned off. Do not touch the motor terminals, otherwise there may be a risk of electric shock.

Warning:

- Please conduct daily and regular inspections and maintenance of equipment and products in accordance with equipment maintenance and maintenance requirements, and make maintenance records.

When repairing**Danger:**

- Strictly prohibit non-professional personnel from performing equipment installation, wiring, maintenance, inspection, or component replacement!
- It is strictly forbidden to carry out equipment maintenance in the state of power, otherwise there is a risk of electric shock!
- After cutting off the power to all equipment, please wait at least the time specified on the warning label on the product before performing equipment inspection, repair, etc. operations.

Warning:

- Please report the equipment in accordance with the product warranty agreement.
- When a fuse blows, a circuit breaker trips, or a leakage current circuit breaker (ELCB) trips, wait at least for the time specified on the warning label on the product before turning on the power supply or operating the machine, as this may result in casualties and damage to the equipment.
- When the equipment fails or is damaged, professionals must troubleshoot and repair the equipment and products according to the maintenance guidance, and make maintenance records.
- Please follow the product wearing parts replacement instructions for replacement.
- Do not continue to use machines that have already been damaged, as this may result in death or death or greater damage to the product.

- After replacing the equipment, be sure to check the wiring and set the parameters again.

When scrapped

Warning:

- Please scrap equipment and products in accordance with relevant national regulations and standards to avoid property damage or casualties!
- Scrapped equipment and products should be disposed of and recycled in accordance with industrial waste treatment standards to avoid polluting the environment.

■ **Safety signage**

In order to ensure safe operation, please be sure to abide by the safety signs pasted on the equipment, and do not damage or peel off the safety signs. The safety mark is described below:

Safety signage	Content description
	Please read the safety manual and instructions carefully before using the product, otherwise there is a risk of injury or death or damage to the product!

3 Product information

3.1 Model and nameplate description

■ Nameplate description



3.2 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: It is in a normal communication state
		Green extinguishing: The system power supply is abnormal		Green extinguishing: in the initial state
	SF	Red: The device is in forced operation mode (reservation, BootLoad mode, etc.)		

		Flashing (red): Configuration error, coupler error, module error, new diagnostic information, etc
		Red extinguishing: The equipment is normal
	ERR	Red light: This product is disconnected
		Flashing (red): The expansion module configuration is inconsistent
		Red extinguishing: No communication failure
Terminal blocks		
Interface name		Functional definition
PORT1		PROFINET Ethernet interface
PORT2		PROFINET Ethernet interface
24V 电源		Module power input terminals
Type-C 接口		Used for single board software upgrade port

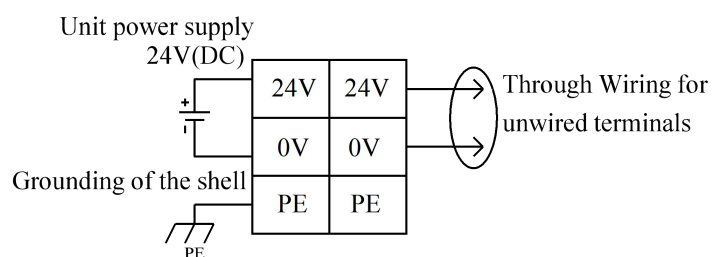
3.3 Specifications

Structural parameters	
Dimensions (WxHxD)	24mm x 104mm x 80mm
Weight	103.4g
Power Parameters:	
The terminal input power supply is rated voltage	24V DC (20.4V DC~ 28.8V DC)
The terminal input power supply is rated current	5A (typical at 24V DC)
The USYS backplane outputs the power supply voltage rating	5V DC (4.75V DC~5.25V DC)
The Usys backplane outputs the current rating	2A (typical at 5V)
UIN backplane output power supply rated voltage	24V DC (20.4V DC~ 28.8V DC)
The UIN backplane outputs the power supply current rating	4A (typical at 24V)
Functional parameters	
Specifications	PROFINET bus, 2 x RJ45, expandable 32 modules, 24VDC
Communication interface	2 RJ45 interfaces with integrated switch function
Network topology	RT, MRP, Auto-addressing/topology detection
Communication protocols	PROFINET
Communication rate	10/100Mbps, adaptive, full duplex
Bus address settings	PROFINET specification
Address mapping	Yes
Diagnosis	Diagnostic alarm, process alarm, module plugging alarm
Isolation method	Electrical isolation from the site

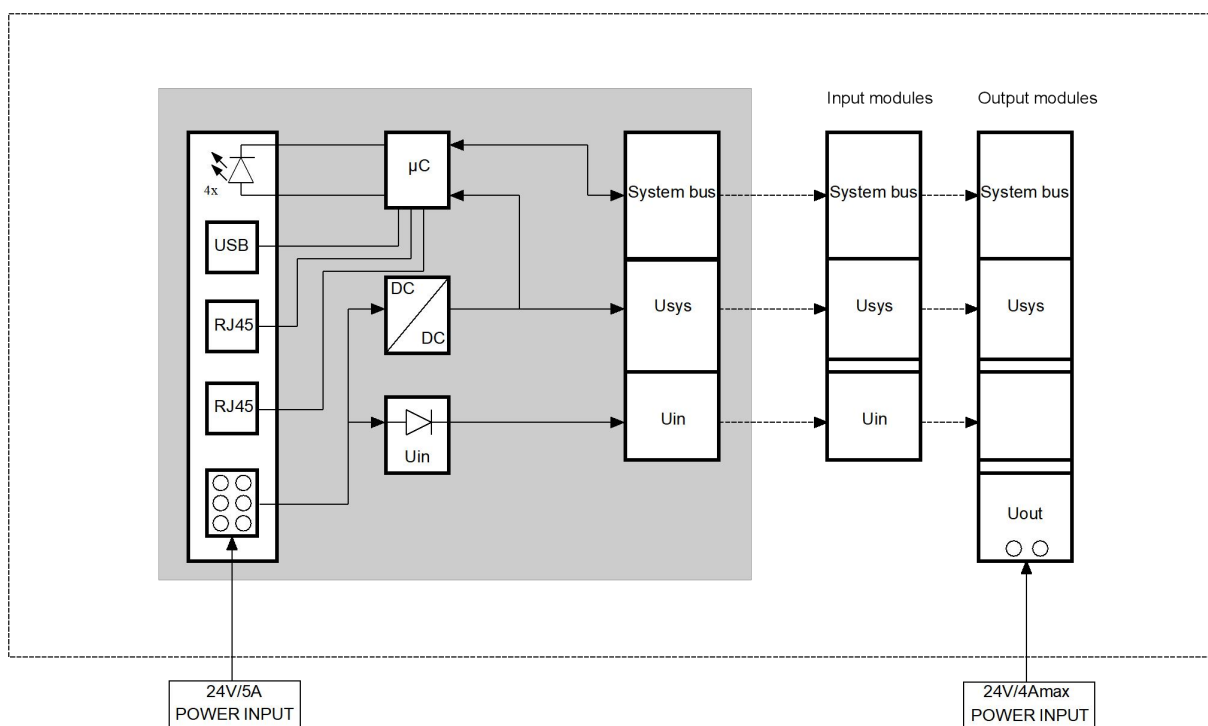
Transmission medium	Class 5 twisted pairs
Software parameters	
Minimum cycle time	1ms
Enter the amount of PDO data	Maximum 1440 bytes
Output PDO data volume	Maximum 1440 bytes
Wiring parameters	
Connection technology: communication/fieldbus	PROFINET IO: 2 x RJ-45
Connectivity technology	PUSH-IN type terminal blocks
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm ²
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27

EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

3.4 Wiring schematic



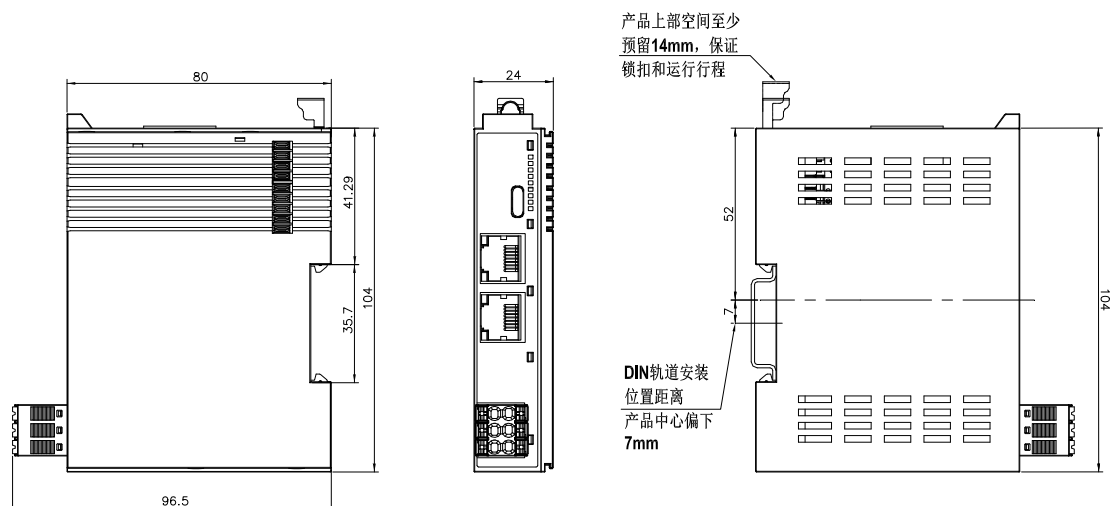
3.5 System block diagram



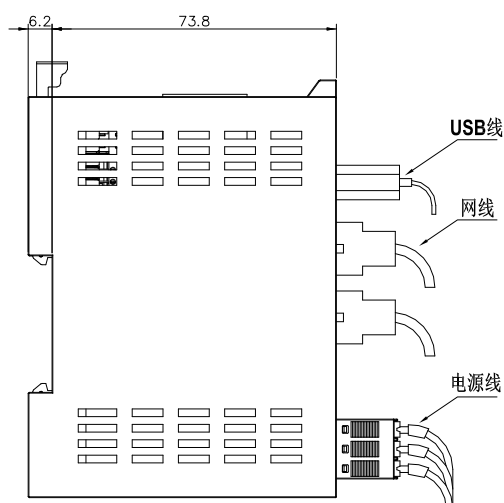
3.6 Installation and disassembly

3.6.1 Mounting dimensions

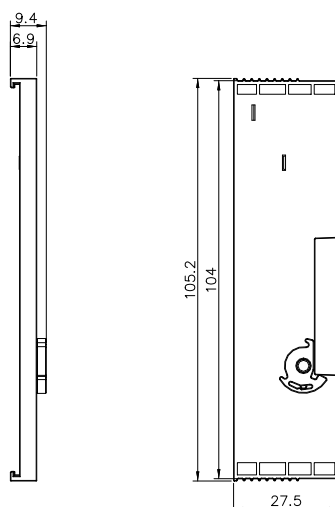
➤ The mounting dimension information is shown in millimeters (mm) as shown in the figure below. .



➤ **Connect the cables**



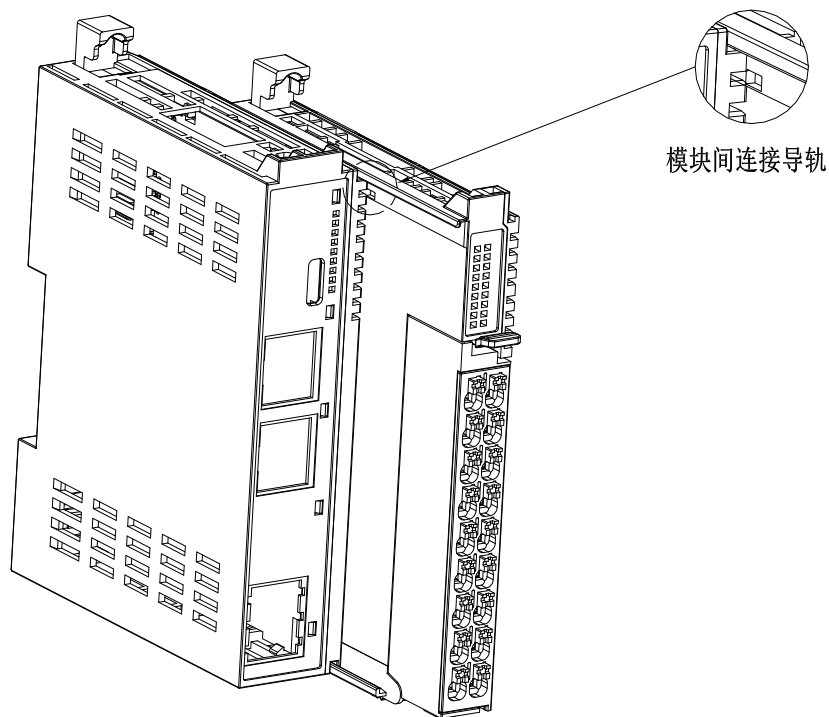
➤ **Tail cover**



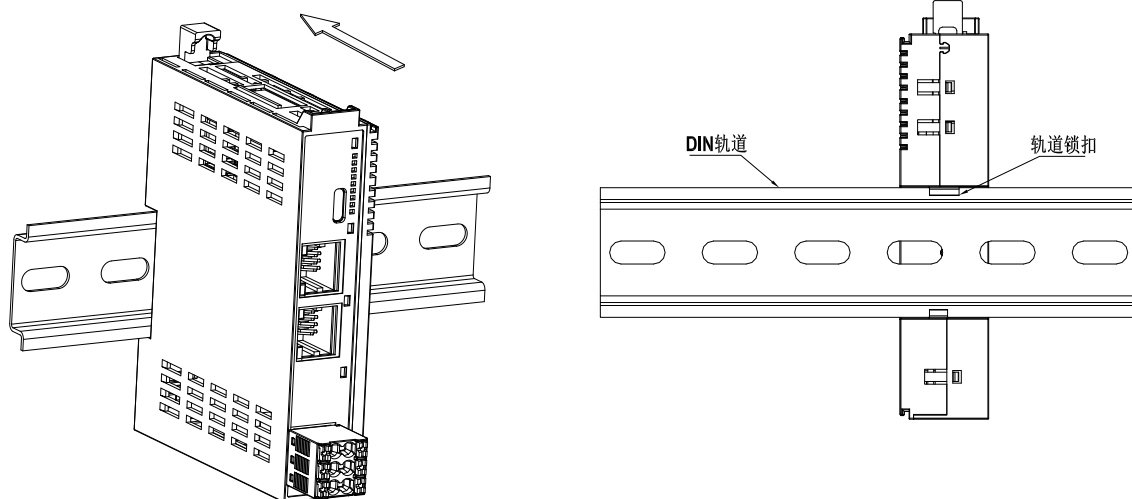
3.6.2 Installation guide

- The inter-module assembly is sliding to install via the top and bottom rails of the

module, as shown in the figure below.



➤ When installing, align the module with the DIN rail, press the module in the direction indicated by the arrow, and there will be a noticeable clamping sound after installation, as shown in the figure below.



➤ Confirm that the DIN rail lock of the module is locked, and the locking and unlocking status of the rail lock are shown in the figure below.



If the DIN rail latch is below, it is locked.

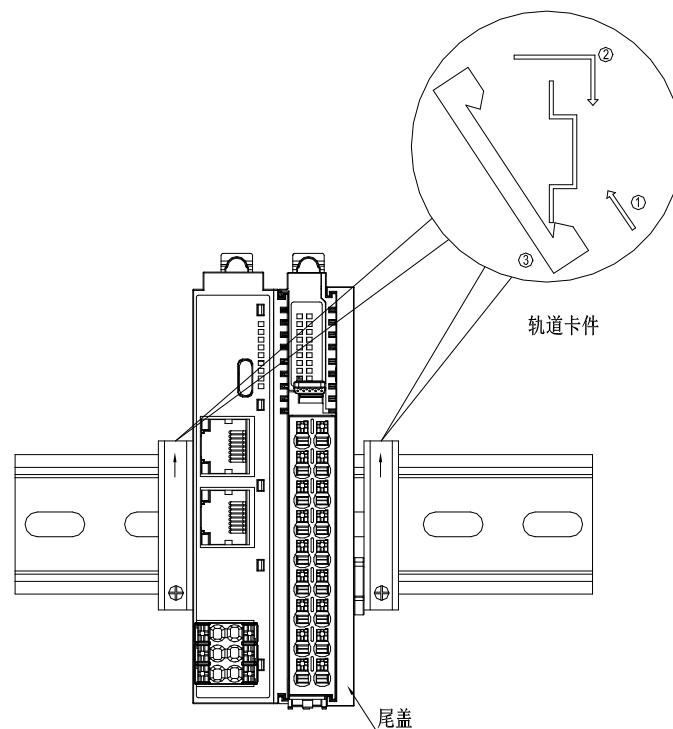
If the DIN rail latch is on top, it is unlocked.

When unlocked, press down on the DIN rail latch to bring it locked.

➤ The tail cover needs to be installed on the last module to prevent the metal PIN from being exposed, and a DIN rail clip is installed at both ends of the main unit or module to prevent the module from sliding left and right, as shown in the figure below.

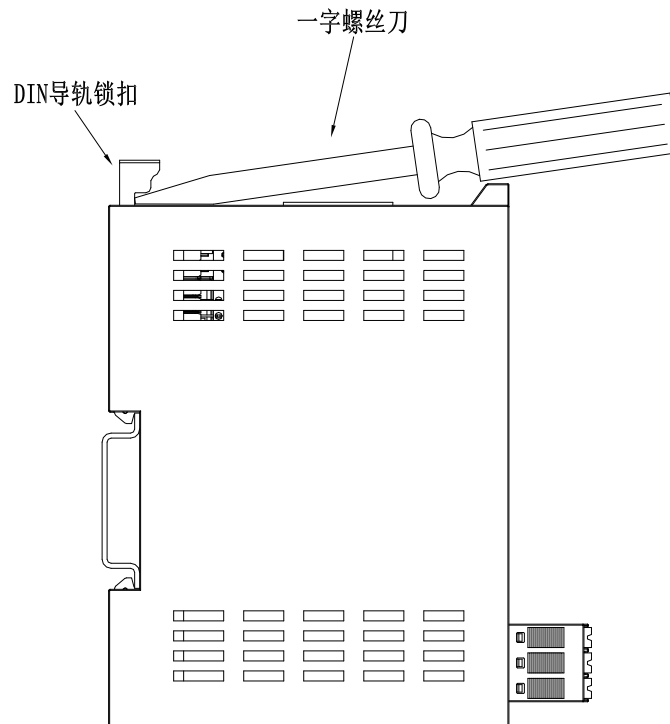
➤ When installing the guide rail clip, hook the bottom of the guide rail clip to the bottom of the guide rail and turn the guide rail clip to make the guide rail clip

➤ The upper end hooks the upper end of the rail, and finally the fastening screw locks the guide rail snap.



3.6.3 Disassembly method:

➤ Use a flathead screwdriver or similar tool to pry the rail latch upwards, then pull the module away from the DIN rail and press down on the top of the latch when finished.



3.6.4 Notes:

- Before installing or disassembling the module, make sure the module is powered off.
- If you encounter a module that is difficult to install, do not use brute force to install it to avoid damaging the current module or other modules. The module should be disassembled from the rail, checked for abnormalities (such as foreign body blockage, etc.), and confirmed that there was no problem before plugging and unplugging.
- If you encounter a module that is difficult to install, do not use brute force to install it to avoid damaging the current module or other modules. The module should be disassembled from the rail, checked for abnormalities (such as foreign body blockage, etc.), and confirmed that there was no problem before plugging and unplugging.

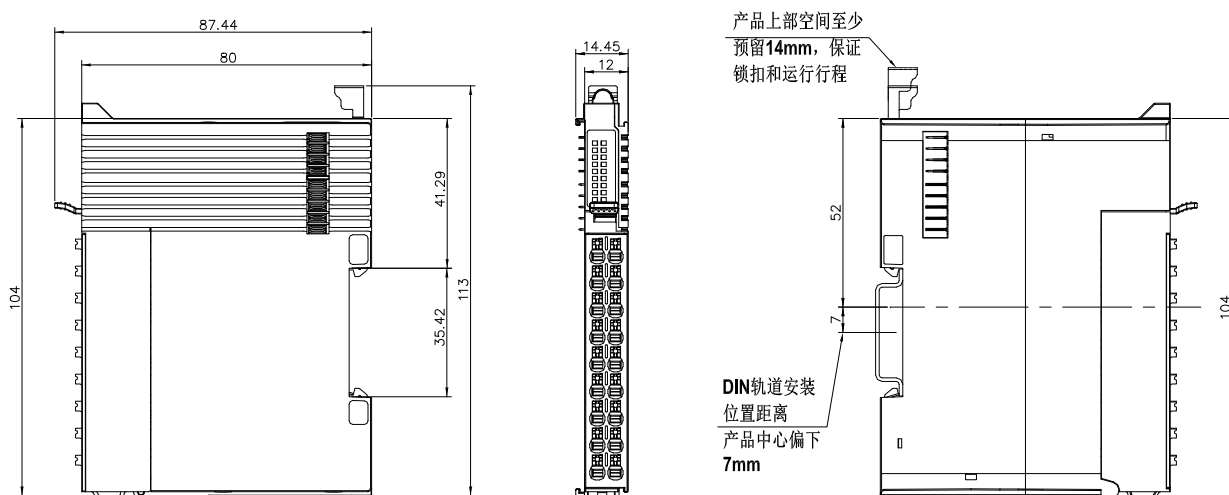
4 Module description

Installation instructions

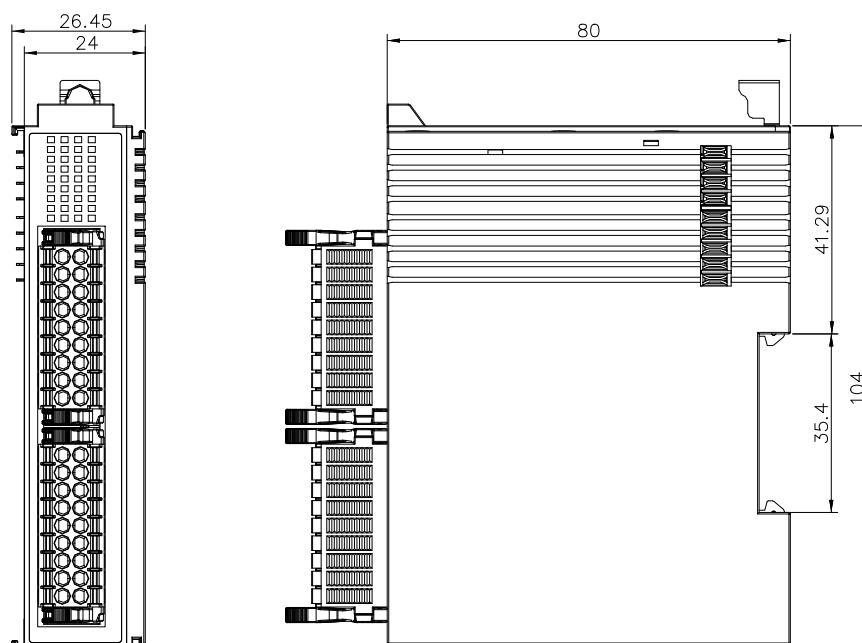
Size description

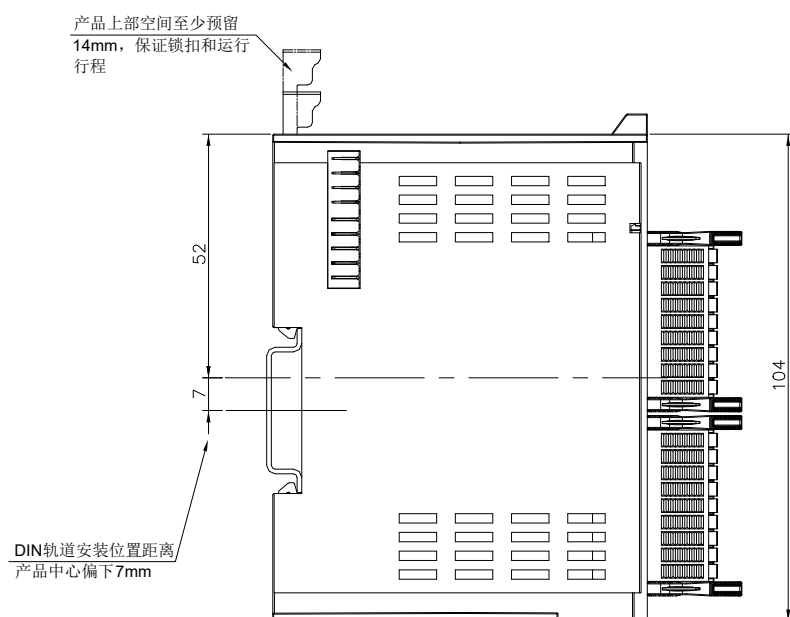
➤ The mounting dimension information is shown in millimeters (mm) as shown in the figure below.

■ 16-bit module



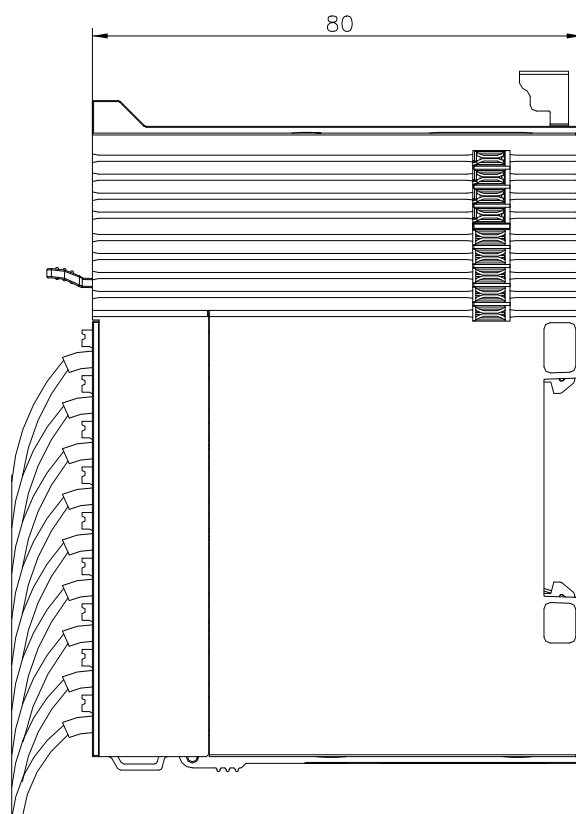
■ 32-bit module



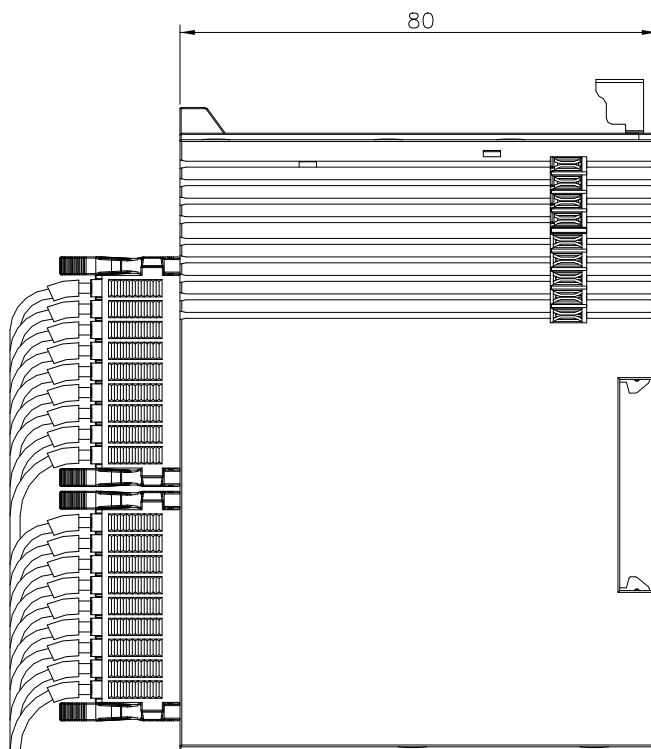


Connect the cables

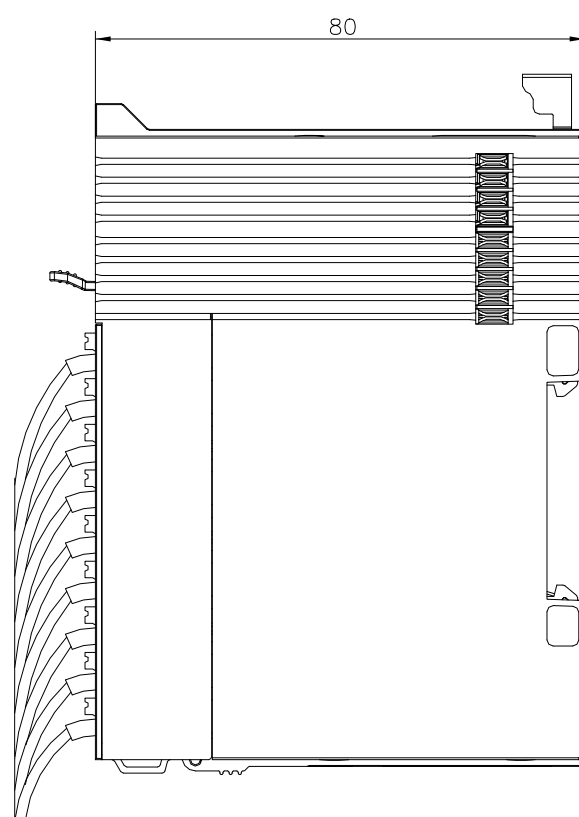
■ 16-bit module



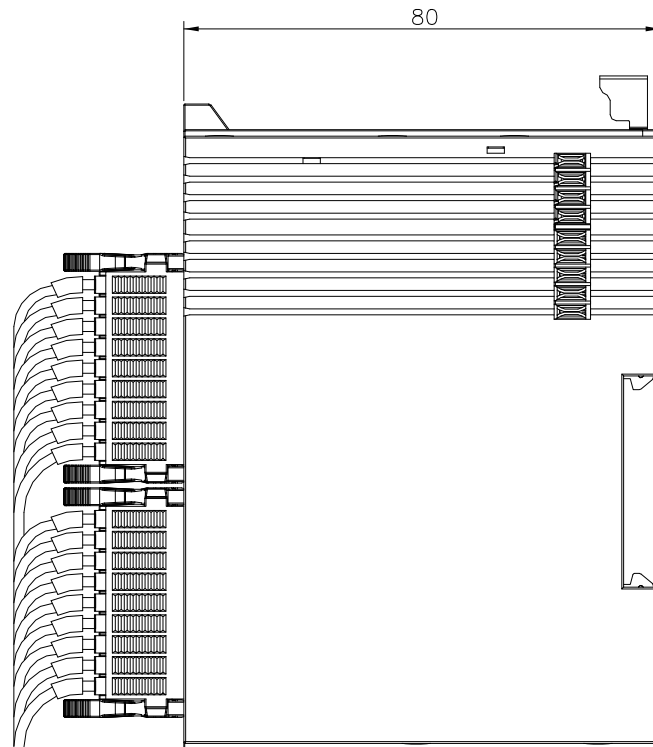
■ 32-bit module



■ 16-bit module

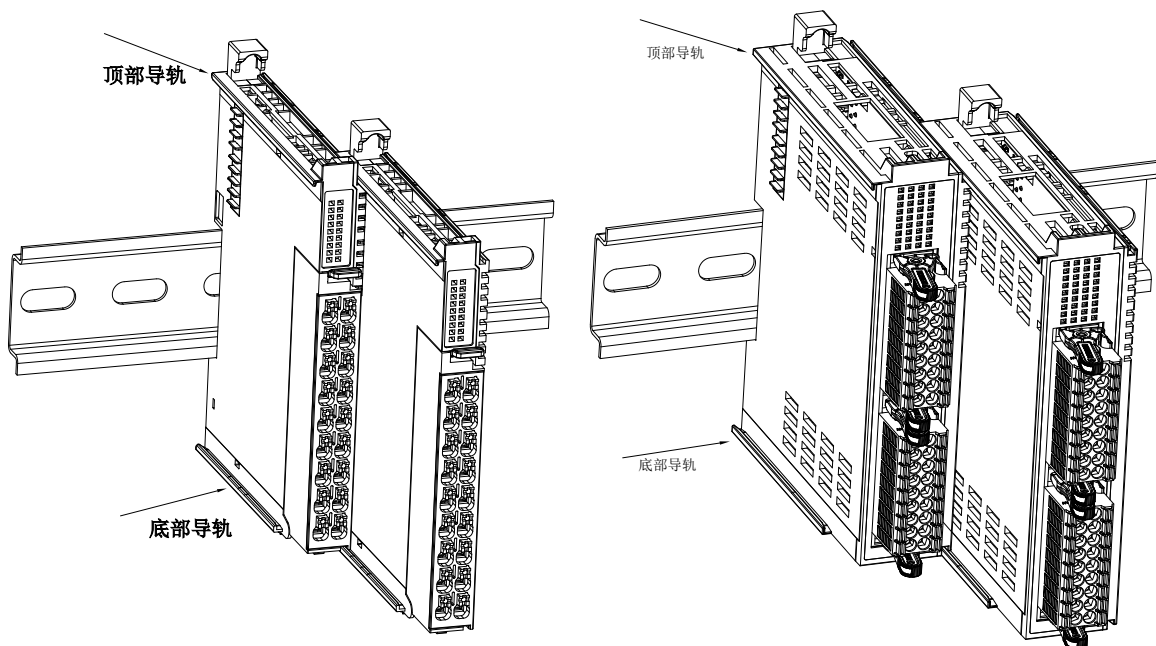


■ 32-bit module



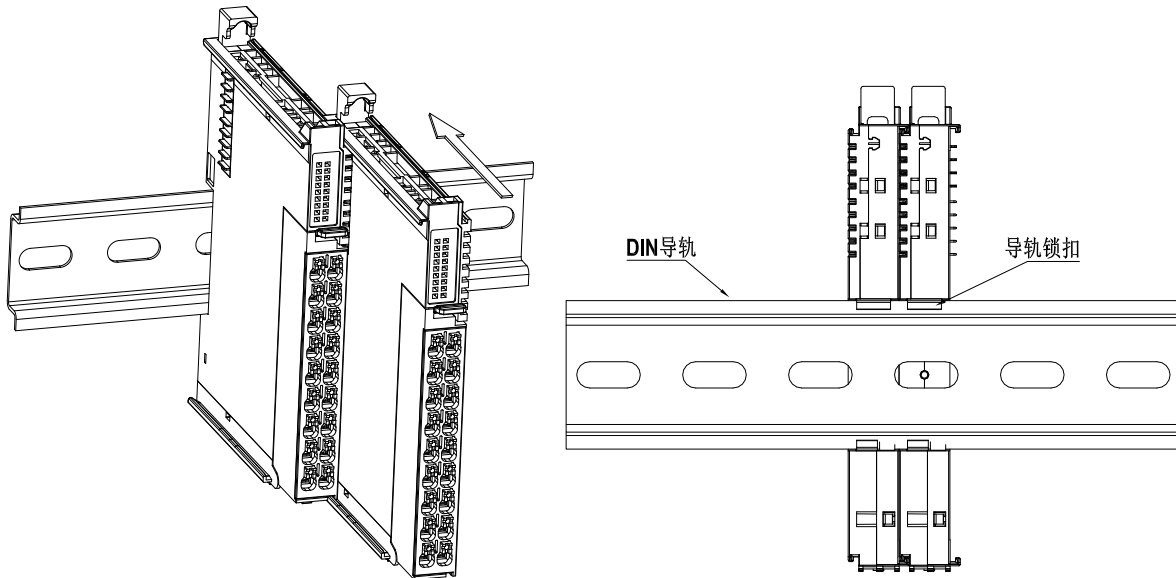
Installation guide

- The inter-module assembly is sliding to install via the top and bottom rails of the module, as shown in the figure below.

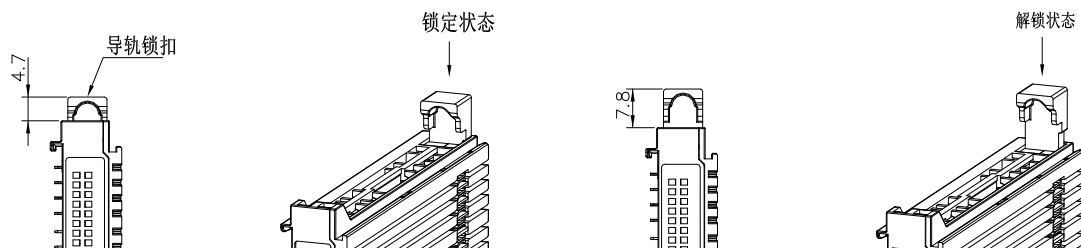


- When installing, align the module with the DIN rail, press the module in the direction

indicated by the arrow, and there will be a noticeable clamping sound after installation, as shown in the figure below.



➤ Confirm that the DIN rail lock of the module is locked, and the locking and unlocking status of the rail lock are shown in the figure below.



If the DIN rail latch is below, it is locked.

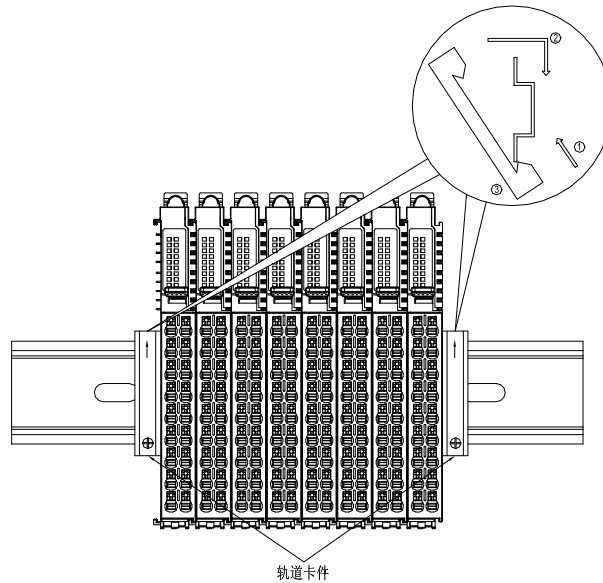
If the DIN rail latch is on top, it is unlocked.

When unlocked, press down on the DIN rail latch to bring it locked.

➤ The tail cover needs to be installed on the last module to prevent the metal PIN from being exposed, and a DIN rail clip is installed at both ends of the main unit or module to prevent the module from sliding left and right, as shown in the figure below.

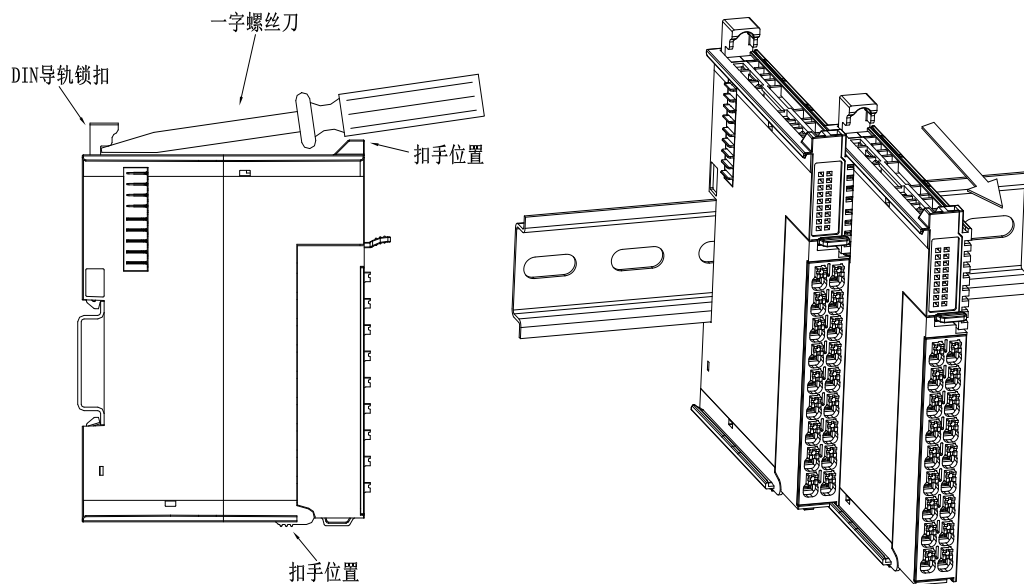
➤ When installing the guide rail clip, hook the bottom of the guide rail clip to the bottom of the guide rail and turn the guide rail clip to make the guide rail clip

➤ When installing the guide rail clip, hook the bottom of the guide rail clip to the bottom of the guide rail and turn the guide rail clip to make the guide rail clip



Disassembly method

Use a flathead screwdriver or similar tool to pry the rail latch upwards, then pull the module away from the DIN rail and press down on the top of the latch when finished



Notes

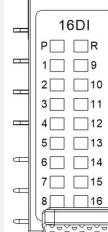
- Before installing or disassembling the module, make sure the module is powered off.
- If you encounter a module that is difficult to install, do not use brute force to install it to avoid damaging the current module or other modules. The module should be

disassembled from the rail, checked for abnormalities (such as foreign body blockage, etc.), and confirmed that there was no problem before plugging and unplugging.

➤ When this product is installed on a non-standard DIN rail (DIN rail thickness is 1.0mm), it will cause the DIN rail lock to fail, and the product will not be installed in place, resulting in the product not working normally.

4.1 DF30-M-16DI-P/N

4.1.1 Part description

Light						
	LED No	Status and Meaning	LED No	Status and Meaning		
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally		
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure		
				Green flashing: Configuration failure/failsafe mode		
	LED1-1	Green: Channels 1-16 input signal is valid				
	6	Green extinguishing: The input signal of channels 1-16 is invalid				

Terminal blocks					
serial number	signal	illustrate	serial number	signal	illustrate
A1	DI 1	The number input channel 1	B1	DI 9	Digital input channel 9
A2	DI 2	Digital input channel 2	B2	DI 10	Digital input channel 10
A3	DI 3	Digital input channel 3	B3	DI 11	Digital input channel 11

A4	DI 4	Digital input channel 4	B4	DI 12	Digital input channel 12
A5	DI 5	The number input channel 5	B5	DI 13	Digital input channel 13
A6	DI 6	Digital input channel 6	B6	DI 14	Digital input channel 14
A7	DI 7	Digital input channel 7	B7	DI 15	Digital input channel 15
A8	DI 8	Digital input channel 8	B8	DI 16	Digital input channel 16
A9	COM	Common pins	B9	COM	Common pins

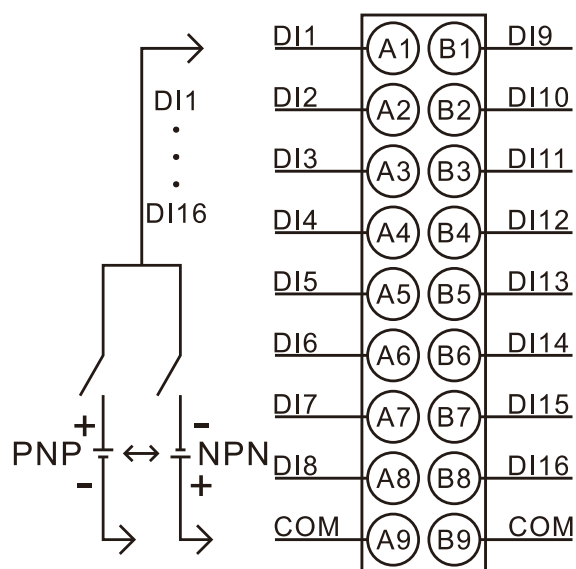
4.1.2 Specifications

Structural parameters		
Dimensions (WxHxD)		12mm x 100mm x 80mm
Weight		71.5g
Power Parameters		
The rated voltage of the USYS bus input power supply		5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current		<50mA (typical at 5V DC)
UOUT power supply input rated voltage		24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating		4A (typical at 24V DC) <50mA (typical at 5V DC)
UOUT power input anti-reverse plug protection		Yes
The module prevents the spread of power failures		Yes
Functional parameters		
Module type		Numeric input
Number of channels		16
Signal type		PNP&NPN
Connection type		1- Wire system
Signal type	"ON" signal voltage	Differential pressure > 11VDC (differential

		pressure from common input)
	"OFF" signal voltage	Differential pressure < 5VDC (differential pressure from common input)
Input impedance		>7.5kΩ
Hardware response time		100us/100us
Whether to quarantine		Yes
Indicator status		When input is in the drive state, the input indicator light is on (software control)
Software parameters		
Data size		2 Byte
Filter time configuration		Supports single-channel independent configuration
Sync mode		Synchronization within the same coupler group is supported
IO mapping		Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters		
Connectivity technology		PUSH-IN type terminal blocks
Connection type		System/field power/input
Crimping area of the wire		0.34~1.5mm
Stripping length		10mm
Installation method:		DIN-35 type rail
Material parameters		
Color		Pantone 419C
Shell material		PC plastic
Environmental requirements		
Allowable ambient temperature (during operation)		-20~55°C
Allowable ambient temperature		-40~85°C

(storage)	
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.1.3 Wiring diagram



4.2 DF30-M-32DI-P/N

4.2.1 Part description

Light

32DI P R 1 9 17 25 2 10 18 26 3 11 19 27 4 12 20 28 5 13 21 29 6 14 22 30 7 15 23 31 8 16 24 32		LED No	Status and Meaning	LED No	Status and Meaning		
		PWR	Green: The system power supply is normal	RUN	Green: The module is running normally		
			Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure		
					Green flashing: Configuration failure/failsafe mode		
		LED1-32	Green Light: Channels 1-32 input signal is valid				
			Green extinguishing: The input signal for channels 1-32 is invalid				
Terminal blocks							
serial number	signal	illustrate	serial number	signal	illustrate		
A1	DI 1	Digital input channel 1	B1	DI 9	Digital input channel 9		
A2	DI 2	Digital input channel 2	B2	DI 10	Digital input channel 10		
A3	DI 3	Digital input channel 3	B3	DI 11	Digital input channel 11		
A4	DI 4	Digital input channel 4	B4	DI 12	Digital input channel 12		
A5	DI 5	Digital input channel 5	B5	DI 13	Digital input channel 13		
A6	DI 6	Digital input channel 6	B6	DI 14	Digital input channel 14		
A7	DI 7	Digital input channel 7	B7	DI 15	Digital input channel 15		
A8	DI 8	Digital input channel 8	B8	DI 16	Digital input channel 16		
A9	COM1	Common pin 1	B9	COM2	Common pin 2		
C1	DI 17	Digital input channel 17	D1	DI 25	Digital input channel 25		
C2	DI 18	Digital input channel 18	D2	DI 26	Digital input channel 26		
C3	DI 19	Digital input channel 19	D3	DI 27	Digital input channel 27		
C4	DI 20	Digital input channel 20	D4	DI 28	Digital input channel 28		

C5	DI 21	Digital input channel 21	D5	DI 29	Digital input channel 29
C6	DI 22	Digital input channel 22	D6	DI 30	Digital input channel 30
C7	DI 23	Digital input channel 23	D7	DI 31	Digital input channel 31
C8	DI 24	Digital input channel 24	D8	DI 32	Digital input channel 32
C9	COM3	Common pin 3	D9	COM4	Common pin 4

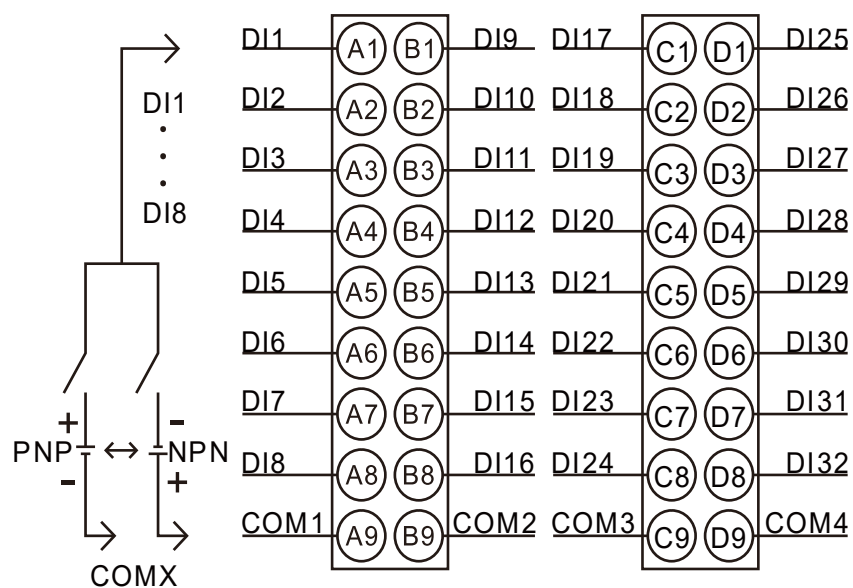
4.2.2 Specifications

Structural parameters		
Dimensions (WxHxD)		12mm x 100mm x 80mm
Weight		113.6g
Power Parameters		
The rated voltage of the USYS bus input power supply		5V DC +20%/−15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current		<50mA (typical at 5V DC)
UOUT power supply input rated voltage		24 V DC +20%/−15% (20.4V DC~28.8V DC)
UOUT power supply input current rating		4A (typical at 24V DC)
UOUT power input anti-reverse plug protection		Yes
The module prevents the spread of power failures		Yes
Functional parameters		
Module type		Numeric input
Number of channels		32
Signal type		PNP&NPN
Connection type		1- Wire system
Signal type	"ON" signal	Differential pressure > 11VDC (differential pressure from

	voltage	common input)
	"OFF" signal voltage	Differential pressure < 5VDC (differential pressure from common input)
Input impedance		>7.5kΩ
Hardware response time		100us/100us
Whether to quarantine		Yes
Indicator status		When the input is valid, the input indicator light is on (software control)
Software parameters		
Data size		4 Byte
Error diagnosis		Communication diagnostics
Filter time configuration		Supports single-channel independent configuration
Sync mode		Synchronization within the same coupler group is supported
IO mapping		Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters		
Connection technology: communication/fieldbus		PROFINET IO: 2 x RJ-45
Connectivity technology		PUSH-IN type terminal blocks
Connection type		System/field power/input
Crimping area of the wire		0.34~1.5mm
Stripping length		10mm
Installation method:		
Material parameters		
Color		gy7042
Shell material		PC plastic
Environmental requirements		
Allowable ambient temperature (during operation)		-20~55°C

Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.2.3 Wiring diagram



4.3 DF30-M-16DO-N

4.3.1 Part description

Light				
16DO-N P R 1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-1	Green: The output signal of channels 1-16 is valid		
	6	Green extinguishing: The output signal of channels 1-16 is invalid		

Terminal blocks					
serial number	signal	illustrate	serial number	signal	illustrate
A1	D0 1	Digital output channel 1	B1	D0 9	Digital output channel 9
A2	D0 2	Digital output channel 2	B2	D0 10	Digital output channel 10
A3	D0 3	Digital output channel 3	B3	D0 11	Digital output channel 11
A4	D0 4	Digital output channel 4	B4	D0 12	Digital output channel 12
A5	D0 5	Digital output channel 5	B5	D0 13	Digital output channel 13
A6	D0 6	Digital output channel 6	B6	D0 14	Digital output channel 14
A7	D0 7	Digital output channel 7	B7	D0 15	Digital output channel 15
A8	D0 8	Digital output channel 8	B8	D0 16	Digital output channel 16
A9	24V	24V power input	B9	0V	0V input

4.3.2 Specifications

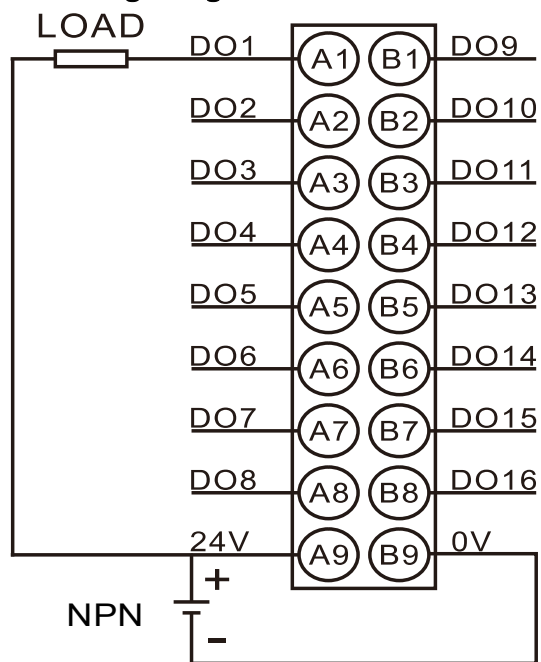
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
weight	71.5g

Power Parameters		
The rated voltage of the USYS bus input power supply		5V DC +20% /-15% (4. 25V DC~ 6V DC)
The USYS bus input power supply is rated current		<60mA (5V DC 时典 type 值)
UOUT power supply input rated voltage		24 V DC +20% /-15% (20. 4V DC~28. 8V DC)
UOUT power supply input current rating		4A (typical at 24V DC)
UOUT power input anti-reverse plug protection		Yes
The module prevents the spread of power failures		Yes
Functional parameters		
Module type		Digital output
Number of channels		16
Signal type		NPN
Connection type		1- Wire system
Power supply input Rated voltage	24V	24V power input
	0V	0V input
NPN signal type	"ON" signal voltage	0V DC
	"OFF" signal voltage	High resistance state, leakage current < 0.1mA0V input
Output Load (Resistive Load)		0. 5A/point, 4A/module
Output Load (Inductive Load)		7. 2W/dot, 24W/module
Output load (light load)		5W/point, 18W/module
Switching frequency		Resistive load 100Hz, inductive load 0. 5Hz, lamp load 10Hz

Hardware response time	100us/100us
Output decreasing	Derated by 50% when operating at 55° C (the output current does not exceed 2A when ON) at the same time, or derated by 10° C when the output point is fully ON
Whether to quarantine	Yes
Protection function	Over-temperature shutdown: minimum value 150° C. Typical value 175° C Overcurrent protection: 3A Support short-circuit protection
Indicator status	When the output is active, the output indicator light is on (software control)
Software parameters	
Data size	2 Byte
Error diagnosis	Communication diagnostics, power supply diagnostics, channel overcurrent diagnostics
Communication fault output state mode	Maintains current value, outputs to replacement value (configurable)
Overcurrent fault output state mode	Auto Retry, Stop Output (Configurable)
Sync mode	Synchronization within the same coupler group is supported
IO mapping	Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters	
Connectivity technology	PUSH-IN type terminal blocks
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C

Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.3.3 Wiring diagram



4.4 DF30-M-16DO-P

4.4.1 Part description

16DO-P

P

R

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14

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15

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16

LED No	Status and Meaning	LED No	Status and Meaning
PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
	Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
			Green flashing: Configuration failure/failsafe mode
LED1-1	Green: The output signal of channels 1-16 is valid		
6	Green extinguishing: The output signal of channels 1-16 is invalid		

Terminal blocks

serial number	signal	illustrate	serial number	signal	illustrate
A1	D0 1	Digital output channel 1	B1	D0 9	Digital output channel 9
A2	D0 2	Digital output channel 2	B2	D0 10	Digital output channel 10
A3	D0 3	Digital output channel 3	B3	D0 11	Digital output channel 11
A4	D0 4	Digital output channel 4	B4	D0 12	Digital output channel 12
A5	D0 5	Digital output channel 5	B5	D0 13	Digital output channel 13
A6	D0 6	Digital output channel 6	B6	D0 14	Digital output channel 14
A7	D0 7	Digital output channel 7	B7	D0 15	Digital output channel 15
A8	D0 8	Digital output channel 8	B8	D0 16	Digital output channel 16
A9	24V	24V power input	B9	0V	0V input

4.4.2 Specifications

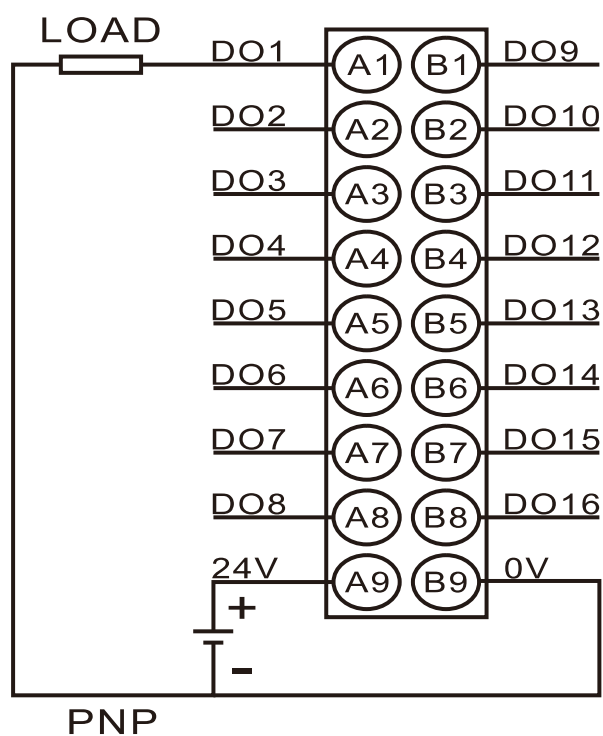
Structural parameters

Dimensions (WxHxD)		12mm x 100mm x 80mm
Weight		71.5g
Power Parameters		
The rated voltage of the USYS bus input power supply		5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current		<60mA (typical at 5V DC)
UOUT power supply input rated voltage		24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating		4A (typical at 24V DC)
UOUT power input anti-reverse plug protection		Yes
The module prevents the spread of power failures		Yes
Functional parameters		
Module type		Digital output
Number of channels		16
Signal type		PNP
Connection type		1- Wire system
Power supply	24V	24V power input
input		
Rated voltage	0V	0V input
PNP signal type	"ON" signal voltage	24V DC
	"OFF" signal voltage	High impedance state, leakage current < 0.1mA
Output Load (Resistive Load)		0.5A/point, 4A/module

Output Load (Inductive Load)	7.2W/dot, 24W/module
Output load (light load)	5W/point, 18W/module
Switching frequency	Resistive load 100Hz, inductive load 0.5Hz, lamp load 10Hz
Hardware response time	100us/100us
Output decreasing	Derated by 50% when operating at 55° C (the output current does not exceed 2A when ON) at the same time, or derated by 10° C when the output point is fully ON
Whether to quarantine	Yes
Protection function	Thermal shutdown: 175° C typical Overcurrent protection: 1A Support short-circuit protection
Indicator status	When the output is active, the output indicator light is on (software control)
Software parameters	
Data size	2 Byte
Error diagnosis	Communication diagnostics, power supply diagnostics, channel overcurrent diagnostics
Communication fault output state mode	Maintains current value, outputs to replacement value (configurable)
Overcurrent fault output state mode	Auto Retry, Stop Output (Configurable)
Sync mode	Synchronization within the same coupler group is supported
I/O mapping	Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters	
Connectivity technology	PUSH-IN type terminal blocks
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
stripping length	10mm
Installation method:	DIN-35 type rail

Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.4.3 Wiring diagram



4.5 DF30-M-32D0-P

4.5.1 Part description

Light				
32DO-P ☐ P ☐ R ☐ 1 ☐ 9 ☐ 17 ☐ 25 ☐ 2 ☐ 10 ☐ 18 ☐ 26 ☐ 3 ☐ 11 ☐ 19 ☐ 27 ☐ 4 ☐ 12 ☐ 20 ☐ 28 ☐ 5 ☐ 13 ☐ 21 ☐ 29 ☐ 6 ☐ 14 ☐ 22 ☐ 30 ☐ 7 ☐ 15 ☐ 23 ☐ 31 ☐ 8 ☐ 16 ☐ 24 ☐ 32	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-32	Green: The output signal of channels 1-32 is valid		
Green extinguishing: The output signal of channels 1-32 is invalid				

Terminal blocks					
serial number	signal	illustrate	Serial number	signal	illustrate
A1	D0 1	Digital output channel 1	B1	D0 9	Digital output channel 9
A2	D0 2	Digital output channel 2	B2	D0 10	Digital output channel 10
A3	D0 3	Digital output channel 3	B3	D0 11	Digital output channel 11
A4	D0 4	Digital output channel 4	B4	D0 12	Digital output channel 12
A5	D0 5	Digital output channel 5	B5	D0 13	Digital output channel 13
A6	D0 6	Digital output channel 6	B6	D0 14	Digital output channel 14
A7	D0 7	Digital output channel 7	B7	D0 15	Digital output channel 15
A8	D0 8	Digital output channel 8	B8	D0 16	Digital output channel 16
A9	24V	24V power input	B9	0V	0V input
C1	D0 17	Digital output channel 17	D1	D0 25	Digital output channel 25
C2	D0 18	Digital output channel 18	D2	D0 26	Digital output channel 26
C3	D0 19	Digital output channel 19	D3	D0 27	Digital output channel 27
C4	D0 20	Digital output channel 20	D4	D0 28	Digital output channel 28
C5	D0 21	Digital output channel 21	D5	D0 29	Digital output channel 29

C6	D0 22	Digital output channel 22	D6	D0 30	Digital output channel 30
C7	D0 23	Digital output channel 23	D7	D0 31	Digital output channel 31
C8	D0 24	Digital output channel 24	D8	D0 32	Digital output channel 32
C9	24V	24V power input	D9	0V	0V input

4.5.2 Specifications

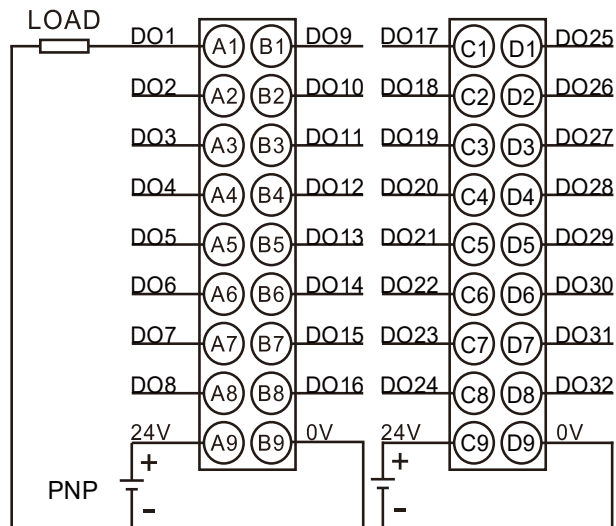
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	113.6g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<60mA (typical at 5V DC)
UOUT power supply input rated voltage	24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating	4A (typical at 24V DC)
UOUT power input anti-reverse plug protection	Yes
The module prevents the spread of power failures	Yes
Functional parameters	
Module type	Digital output
Number of channels	32
Signal type	PNP
Connection type	1- Wire system

Power supply input Rated voltage	24V	24V power input
	0V	0V input
PNP signal type	"ON" signal voltage	24V DC
	"OFF" signal voltage	High configuration, leakage current < 0.1mA
Output Load (Resistive Load)		0.5A/point, 8A/module
Output Load (Inductive Load)		7.2W/dot, 48W/module
Output load (light load)		5W/dot, 36W/module
Switching frequency		Resistive load 100Hz, inductive load 0.5Hz, lamp load 10Hz
Hardware response time		100us/100us
Output decreasing		Derating by 50% when operating at 55° C (the output current does not exceed 4A when turned on at the same time), or derating by 10° C when the output point is fully ON
Whether to quarantine		Yes
Protection function		Thermal shutdown: 175° C typical Overcurrent protection: 1A Support short-circuit protection
Indicator status		When the output is active, the output indicator light is on (software control)
Software parameters		
Data size		4 Byte
Error diagnosis		Communication diagnostics, power supply diagnostics, channel overcurrent diagnostics
Communication fault output state mode		Keep the current value and output as the replacement value

Overcurrent fault output state mode	Auto Retry, Stop Output (Configurable)
Sync mode	Synchronization within the same coupler group is supported
I/O mapping	Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters	
Connection technology: communication/fieldbus	PROFINET I/O: 2 x RJ-45
Connectivity technology	PUSH-IN type terminal blocks
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	gy7042
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27

EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.5.3 Wiring diagram



4.6 DF30-M-32DO-N

4.6.1 Part description

Light						
32DO-N P R 1 9 17 25 2 10 18 26 3 11 19 27 4 12 20 28 5 13 21 29 6 14 22 30 7 15 23 31 8 16 24 32	LED No	Status and Meaning	LED No	Status and Meaning		
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally		
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure		
				Green flashing: Configuration failure/failsafe mode		
	LED1-32	LED1	Green: The output signal of channels 1-32 is valid			
		-32	Green extinguishing: The output signal of channels 1-32 is invalid			
Terminal blocks						
serial	signal	illustrate	serial	signal	illustrate	

number			number		
A1	D0 1	Digital output channel 1	B1	D0 9	Digital output channel 9
A2	D0 2	Digital output channel 2	B2	D0 10	Digital output channel 10
A3	D0 3	Digital output channel 3	B3	D0 11	Digital output channel 11
A4	D0 4	Digital output channel 4	B4	D0 12	Digital output channel 12
A5	D0 5	Digital output channel 5	B5	D0 13	Digital output channel 13
A6	D0 6	Digital output channel 6	B6	D0 14	Digital output channel 14
A7	D0 7	Digital output channel 7	B7	D0 15	Digital output channel 15
A8	D0 8	Digital output channel 8	B8	D0 16	Digital output channel 16
A9	24V	24V power input	B9	0V	0V input
C1	D0 17	Digital output channel 17	D1	D0 25	Digital output channel 25
C2	D0 18	Digital output channel 18	D2	D0 26	Digital output channel 26
C3	D0 19	Digital output channel 19	D3	D0 27	Digital output channel 27
C4	D0 20	Digital output channel 20	D4	D0 28	Digital output channel 28
C5	D0 21	Digital output channel 21	D5	D0 29	Digital output channel 29
C6	D0 22	Digital output channel 22	D6	D0 30	Digital output channel 30
C7	D0 23	Digital output channel 23	D7	D0 31	Digital output channel 31
C8	D0 24	Digital output channel 24	D8	D0 32	Digital output channel 32
C9	24V	24V power input	D9	0V	0V input

4.6.2 Specifications

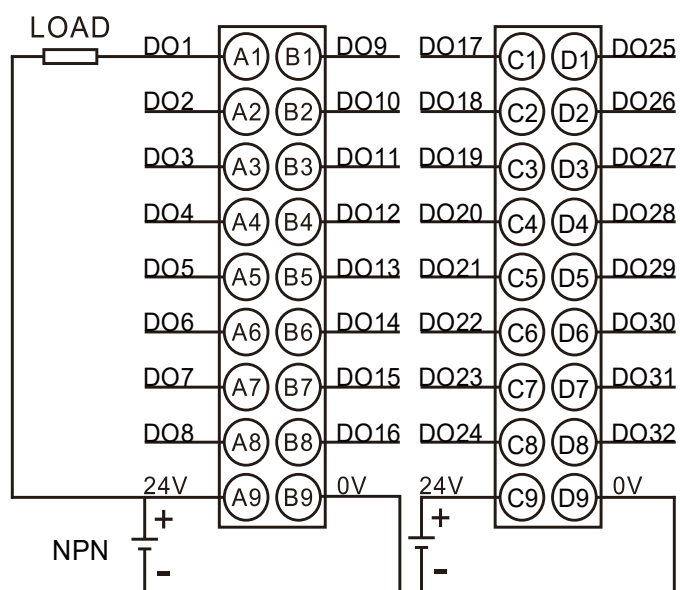
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	113.6g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<60mA (typical at 5V DC)

UOUT power supply input rated voltage		24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating		4A (typical at 24V DC)
UOUT power input anti-reverse plug protection		Yes
The module prevents the spread of power failures		Yes
Functional parameters		
Module type		Digital output
Number of channels		32
Signal type		NPN
Connection type		1- Wire system
Power supply input Rated voltage	24V	24V power input
	0V	0V input
NPN signal type	"ON" signal voltage	24V DC
	"OFF" signal voltage	High configuration, leakage current < 0.1mA
Output Load (Resistive Load)		0.5A/point, 8A/module
Output Load (Inductive Load)		7.2W/dot, 48W/module
Output load (light load)		5W/dot, 36W/module
Switching frequency		Resistive load 100Hz, inductive load 0.5Hz, lamp load 10Hz
Hardware response time		100us/100us
Output decreasing		Derating by 50% when operating at 55° C (the output current does not exceed 4A when turned on at the same time), or derating by 10° C when the output point is fully

	ON
Whether to quarantine	Yes
Protection function	Over-temperature shutdown: minimum value 150° C. Typical value 175° C Overcurrent protection: 3A Support short-circuit protection
Indicator status	When the output is active, the output indicator light is on (software control)
Software parameters	
Data size	4 Byte
Error diagnosis	Communication diagnostics, power supply diagnostics, channel overcurrent diagnostics
Communication fault output state mode	Keep the current value and output as the replacement value
Overcurrent fault output state mode	Automatic retries
Sync mode	Synchronization within the same coupler group is supported
I/O mapping	Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters	
Connection technology: communication/fieldbus	PROFINET I/O: 2 x RJ-45
Connectivity technology	PUSH-IN type terminal blocks
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	

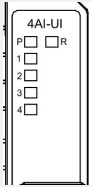
Color	gy7042
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.6.3 Wiring diagram



4.7 DF30-M-4AI-UI

4.7.1 Part description

Light						
	LED No	Status and Meaning	LED No	Status and Meaning		
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally		
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure		
				Green flashing: Configuration failure/failsafe mode		
	LED1-4	Green: Channels 1-4 input signal is valid				
		Green extinguishing: The input signal of channels 1-4 is invalid				
		Green flashing: When the diagnostic switch for channels 1-4 is turned on, the corresponding input channel fault is affected				
	Terminals					
	serial number	signal	illustrate	serial number	signal	illustrate
	A1	U1+	Analog voltage input channel 1	B1	U1-	Analog voltage input channel 1
A2	U2+	Analog voltage input channel 2	B2	U2-	Analog voltage input channel 2	
A3	U3+	Analog voltage input channel 3	B3	U3-	Analog voltage input channel 3	
A4	U4+	Analog voltage input channel 4	B4	U4-	Analog voltage input channel 4	
A5	I1+	Analog current input channel 1	B5	I1-	Analog current input channel 1	

A6	I2+	Analog current input channel 2	B6	I2-	Analog current input channel 2
A7	I3+	Analog current input channel 3	B7	I3-	Analog current input channel 3
A8	I4+	Analog current input channel 4	B8	I4-	Analog current input channel 4
A9	24V	24V power output	B9	0V	0V output

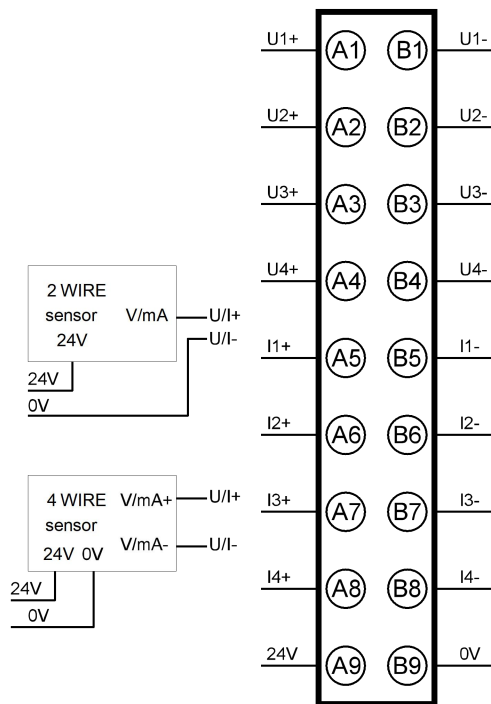
4.7.2 Specifications

Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters:	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50mA
UIN power supply input rated voltage	24 V DC (20.4V DC~28.8V DC)
UIN power supply input current rating	<50mA non-distribution
	<250mA power distribution
UIN power input anti-reverse plug protection	Yes
Functional parameters	
Module type	Analog voltage and current input module
Number of channels	4
signaltype	Voltage/current
Connection type	2-wire power distribution, 4-wire non-power distribution
Channel mode configuration	Disable, 0~10mA、0~20mA、4~20mA、±10V、0~10V、2~10V、±5V、0~5V、1~5V

Voltage input accuracy	$\pm 0.1\%$ ($\pm 10V$ full scale)
Voltage input impedance	$>400K\Omega$
Voltage input limit	$\pm 15V$
Voltage input diagnostics	Over-limit detection, 2~10V, 1~5V support disconnection detection
Current sampling impedance	$\leq 250\Omega$
Current input accuracy	$\pm 0.1\%$ (20mA full scale)
Current input limit	30mA
Current input diagnostics	Over-limit detection, 4~20mA supports disconnection detection
Whether to quarantine	The interface channels are not isolated, and the interface is isolated from the bus
Input action display	When the input signal is valid, the input channel indicator light is solid (software control)
Software parameters	
Sampling period	1ms (4 channels)
Filtering method	Sliding window filtering, debounce filtering, 50HZ/60HZ anti-power frequency
Data size	8 Byte
Error diagnosis	Communication diagnosis, power supply diagnosis, channel overrun diagnosis, channel disconnection diagnosis
IO MAPPING	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	

Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.7.3 Wiring diagram



Concentrate:

➤ If the sensor enumeration item in channel 1 is configured as $0 \sim 10\text{mA} \sim 4 \sim 20\text{mA}$, then channel 1 is the current detection mode, and the sensor is connected to the A5 ~ B5 channel; If the sensor enumeration item in channel 1 is configured as $-10\text{V} \sim +10\text{V} \sim 1\text{V} \sim 5\text{V}$, then channel 1 is in voltage detection mode, and the sensor is connected to channel A1 ~ B1;

➤ If the sensor enumeration in channel 2 is configured as $0 \sim 10\text{mA} \sim 4 \sim 20\text{mA}$, channel 2 is the current detection mode, and the sensor is connected to the A6 ~ B6 channel; If the sensor enumeration on channel 2 is configured as $-10\text{V} \sim +10\text{V} \sim 1\text{V} \sim 5\text{V}$, then channel 2 is in voltage detection mode, the sensor is connected to channel A2 ~ B2, and so on for other channels.

4.8 DF30-M-4AO-UI

4.8.1 Part description

指示灯				
4AO-UI P ☐ R ☐ 1 ☐ 2 ☐ 3 ☐	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply	RUN	Green: The module is running

		is normal		normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-4	Green light: Channels 1-4 output signal is valid		
		Green extinction: The output signal of channels 1-4 is invalid		

Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	U1+	Analog voltage output channel 1	B1	U1-	Analog voltage output channel 1
A2	U2+	Analog voltage output channel 2	B2	U2-	Analog voltage output channel 2
A3	U3+	Analog voltage output channel 3	B3	U3-	Analog voltage output channel 3
A4	U4+	Analog voltage output channel 4	B4	U4-	Analog voltage output channel 4
A5	I1+	Analog current output channel 1	B5	I1-	Analog current output channel 1
A6	I2+	Analog current output channel 2	B6	I2-	Analog current output channel 2
A7	I3+	Analog current output channel 3	B7	I3-	Analog current output channel 3
A8	I4+	Analog current output channel 4	B8	I4-	Analog current output channel 4
A9	24V	24V power input	B9	0V	0V input

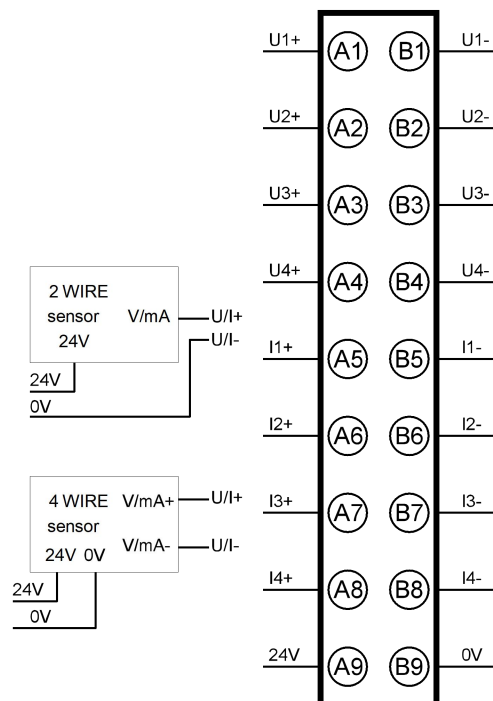
4.8.2 Specifications

Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50mA (typical at 5V DC)
UOUT power supply input rated voltage	24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating	<200mA
UOUT power input anti-reverse plug protection	Yes
Functional parameters	
Module type	Analog voltage current output
Number of channels	4
signaltype	Voltage/current
Connection type	2-wire power distribution, 4-wire non-power distribution
Voltage output range	$\pm 10V$ 、0~10V、2~10V、 $\pm 5V$ 、0~5V、1~5V
Voltage output load	>1k Ω
Voltage output accuracy	$\pm 0.1\%$
Current output range	0~10mA、0~20mA、4~20mA
current output load	0~10mA: <1.5k Ω other: <600 Ω
Current output accuracy	$\pm 0.1\%$
Whether to quarantine	The interface channels are not isolated, the power supply is isolated from the interface, and the interface is

	isolated from the bus
Output action display	When the output is active, the output indicator light is on (software control)
Software parameters	
Convert the range of digital quantities	-20000~20000, -32000~32000, -27648~27648
I/O process data size	16byte
Error diagnosis	Communication diagnostics, power supply diagnostics, output open circuits (effective when current is output)
Sync mode	Synchronization within the same coupler group is supported
I/O mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m

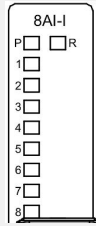
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.8.3 Wiring diagram



4.9 DF30-M-8AI-I

4.9.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is		Green extinguishing: module hardware failure,

		abnormal		communication failure		
				Green flashing: Configuration failure/failsafe mode		
	LED1-8	Green: Channels 1-8 input signal valid				
		Green extinguished: The signal input for channels 1-8 is invalid				
		Green flashing: When the diagnostic switch on channels 1-8 is on, the corresponding input channel is faulty				
Terminals						
Serial number	signal	illustrate	Serial number	signal	illustrate	
A1	I1+	Current input channel1	B1	I1-	Current input channel1	
A2	I2+	Current input channel2	B2	I2-	Current input channel2	
A3	I3+	Current input channel3	B3	I3-	Current input channel3	
A4	I4+	Current input channel4	B4	I4-	Current input channel4	
A5	I5+	Current input channel5	B5	I5-	Current input channel5	
A6	I6+	Current input channel6	B6	I6-	Current input channel6	
A7	I7+	Current input channel7	B7	I7-	Current input channel7	
A8	I8+	Current input channel8	B8	I8-	Current input channel8	
A9	24V	24V power output	B9	0V	0V output	

4.9.2 Specifications

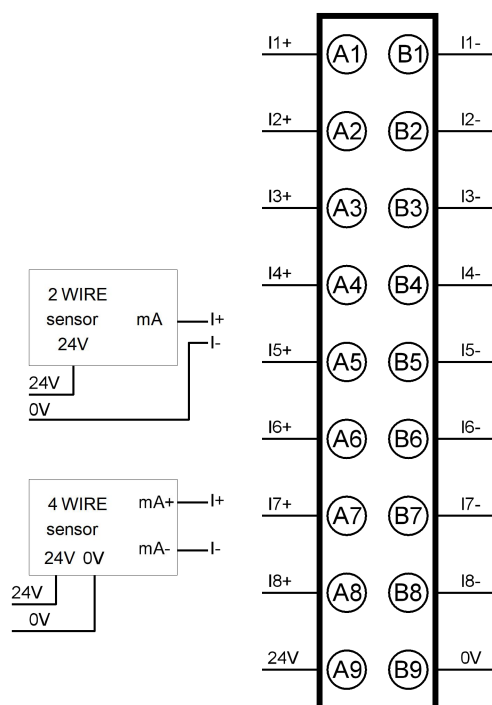
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50mA

UIN power supply input rated voltage	24 V DC (20.4V DC~28.8V DC)
UIN power supply input current rating	<50mA non-distribution
	< 250mA power distribution
UIN power input anti-reverse plug protection	Yes
The module prevents the spread of power failures	Yes
Functional parameters	
Module type	Analog input module
Number of channels	8
Signal type	current
Connection type	2-wire power distribution, 4-wire non-power distribution
Maximum input range of current	0~10mA: 0~12.5mA 0~20mA: 0~24mA 4~20mA: 1.19~24mA
Current harvesting impedance	$\leq 250\Omega$
Current input accuracy	$\pm 0.1\%$ (full scale)
Drift	$\pm 50\text{ppm/K}$
Current protection	30mA
Current input diagnostics	Over-limit detection, 4~20mA Yes disconnection detection
Whether to quarantine	The interface channels are not isolated, the power supply is isolated from the interface, and the interface is isolated from the bus
Independent channel enable configuration	Yes
Diagnose and report feature configurations	Yes

Channel mode configuration	Disable, 0~10mA, 0~20mA, 4~20mA
Input action display	When the input signal is valid, the input indicator light is solid
Channel reverse polarity protection	Yes
The channel is anti-24V misconnected	Yes
Software parameters	
Sampling period	1.6ms (8 channels)
Filtering method	Sliding window filtering, debounce filtering, 50HZ/60HZ anti-power frequency
Data size	16 Byte
Error diagnosis	Communication diagnosis, power supply diagnosis, channel overrun diagnosis, channel disconnection diagnosis
I/O mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient	-40~85°C

temperature (storage)	
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.9.3 Wiring diagram



4.10 DF30-M-8A0-I

4.10.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning

	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-8	Green light: Channels 1-8 output signal is valid		
		Green extinguishing: Channels 1-8 output signal abnormal		

Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	I1+	Current output channel1	B1	I1-	Current output channel1
A2	I2+	Current output channel2	B2	I2-	Current output channel2
A3	I3+	Current output channel3	B3	I3-	Current output channel3
A4	I4+	Current output channel4	B4	I4-	Current output channel4
A5	I5+	Current output channel5	B5	I5-	Current output channel5
A6	I6+	Current output channel6	B6	I6-	Current output channel6
A7	I7+	Current output channel7	B7	I7-	Current output channel7
A8	I8+	Current output channel8	B8	I8-	Current output channel8
A9	24V	24V power input	B9	0V	0V input

4.10.2 Specifications

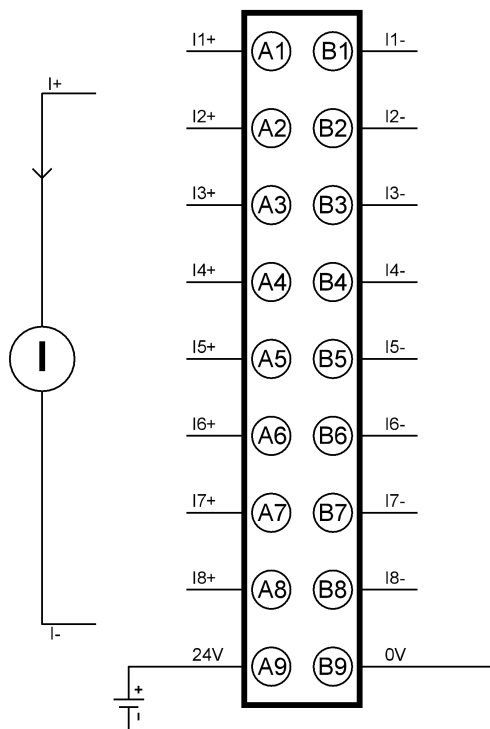
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power	<50mA (typical at 5V DC)

supply is rated current	
UOUT power supply input rated voltage	24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating	<200mA
UOUT power input anti-reverse plug protection	Yes
Functional parameters	
Module type	Analog output
Number of channels	8
signaltype	current
Current output range	0~10ma: 0~12.5ma 0~20ma: 0~24ma 4~20ma: 1.19~24ma
Current output load	0~10ma: <1.5kΩ other: <600Ω
Current output accuracy	±0.1% (full scale)
Channel mode configuration	Disable, 0~10ma, 0~20ma, 4~20ma
Whether to quarantine	The interface channel is not isolated, the interface is isolated from the bus, 500VAC
Drift	±50ppm/k
Output response time	10%~90% 阶跃: <100ms
Diagnostic tests	Communication diagnosis, power supply diagnosis, output open circuit
Output status configuration after shutdown	Keep the current output or output preset
Stop mode	Press the faildown state mode and no longer refresh
Output action display	When the output signal is valid, the indicator light is

	always on
Software parameters	
Convert the range of digital quantities	0~20000, 0~32000, 0~27648
I/O process data size	16byte
Error diagnosis	Communication diagnosis, power supply diagnosis, output open circuit
Sync mode	Synchronization within the same coupler group is supported
I/O mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH

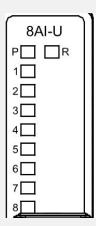
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.10.3 Wiring diagram



4.11 DF30-M-8AI-U

4.11.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration

				failure/failsafe mode
	LED1-8	Green: Channels 1-8 input signal valid		
		Green extinguished: The signal input for channels 1-8 is invalid		
		Green flashing: When the input diagnostic switch on channels 1-8 is turned on, the corresponding channel input fault		

Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	U1+	Voltage input channel1	B1	U1-	Voltage input channel1
A2	U2+	Voltage input channel2	B2	U2-	Voltage input channel2
A3	U3+	Voltage input channel3	B3	U3-	Voltage input channel3
A4	U4+	Voltage input channel4	B4	U4-	Voltage input channel4
A5	U5+	Voltage input channel5	B5	U5-	Voltage input channel5
A6	U6+	Voltage input channel6	B6	U6-	Voltage input channel6
A7	U7+	Voltage input channel7	B7	U7-	Voltage input channel7
A8	U8+	Voltage input channel8	B8	U8-	Voltage input channel8
A9	24V	24V power output	B9	0V	0V output

4.11.2 Specifications

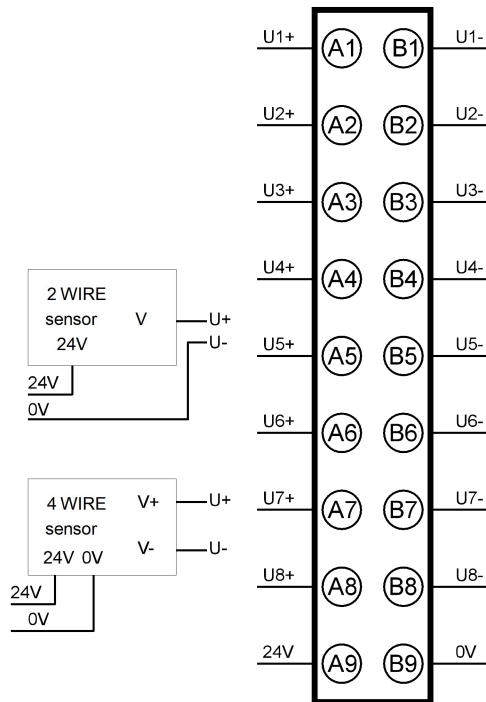
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50m
UIN power supply input rated voltage	24 V DC (20.4V DC~28.8V DC)

UIN power supply input	<50mA non-distribution
current rating	< 250mA power distribution
UIN power input anti-reverse plug protection	Yes
The module prevents the spread of power failures	Yes
Functional parameters	
Module type	Analog input module
Number of channels	8
signaltype	voltage
Connection type	2-wire power distribution, 4-wire non-power distribution
Voltage input range	$\pm 10V$ 、 $0\sim 10V$ 、 $2\sim 10V$ 、 $\pm 5V$ 、 $0\sim 5V$ 、 $1\sim 5V$
Input impedance	$>400K\Omega$
Voltage input accuracy	$\pm 0.1\%$ (full scale)
Drift	$\pm 50\text{ppm/K}$
Voltage protection	24V
Voltage input diagnostics	$2\sim 10V$ 、 $1\sim 5VZ$ support disconnection detection
Whether to quarantine	The interface channels are not isolated, and the interface is isolated from the bus
Voltage input diagnostics	Yes
Diagnose and report feature configurations	Yes
Channel mode configuration	Disable、 $\pm 10V$ 、 $0\sim 10V$ 、 $2\sim 10V$ 、 $\pm 5V$ 、 $0\sim 5V$ 、 $1\sim 5V$
Input action display	When the input signal is valid, the input indicator light is solid
The channel is anti-24V misconnected	Yes
Software parameters	
Sampling period	1.6ms (8 channels)

Filtering method	Sliding window filtering, dejitter filtering, 50HZ\60HZ anti-power frequency
Data size	16 Byte
Error diagnosis	Communication diagnosis, power supply diagnosis, channel overrun diagnosis, channel disconnection diagnosis
IO mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
stripping length	10mm
Installation method:	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference	Zone B, IEC61131-2

rating	
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.11.3 Wiring diagram



4.12 DF30-M-8AO-U

4.12.1 Part description

Light				
8AO-U P☐R☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-8	Green light: Channels 1-8 output signal is valid		
		Green extinguishing: The output signal of channels 1-8 is invalid		

Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	U1+	Voltage output channel1	B1	U1-	Voltage output channel1
A2	U2+	Voltage output channel2	B2	U2-	Voltage output channel2
A3	U3+	Voltage output channel3	B3	U3-	Voltage output channel3
A4	U4+	Voltage output channel4	B4	U4-	Voltage output channel4
A5	U5+	Voltage output channel5	B5	U5-	Voltage output channel5
A6	U6+	Voltage output channel6	B6	U6-	Voltage output channel6
A7	U7+	Voltage output channel7	B7	U7-	Voltage output channel7
A8	U8+	Voltage output channel8	B8	U8-	Voltage output channel8
A9	24V	24V power input	B9	0V	0V input

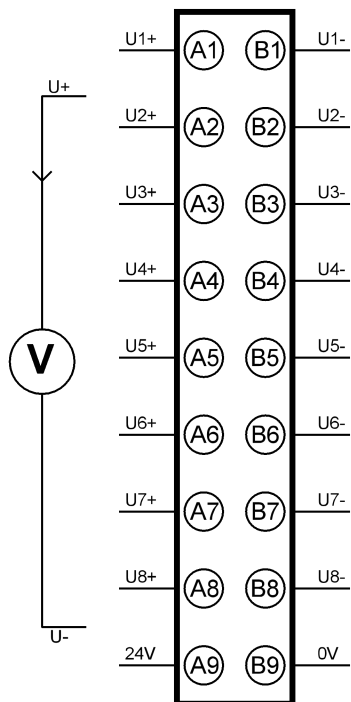
4.12.2 Specifications

Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50mA (typical at 5V DC)
UOUT power supply input rated voltage	24 V DC +20%/-15% (20.4V DC~28.8V DC)
UOUT power supply input current rating	<200mA
UOUT power input anti-reverse plug protection	Yes
Functional parameters	

Module type	Analog output
Number of channels	8
Signal type	voltage
Voltage output range	$\pm 10\text{V}$ 、 $0\sim 10\text{V}$ 、 $2\sim 10\text{V}$ 、 $\pm 5\text{V}$ 、 $0\sim 5\text{V}$ 、 $1\sim 5\text{V}$
Voltage output load	$>1\text{k}\Omega$
Voltage output accuracy	$\pm 0.1\%$ (full scale)
Whether to quarantine	The interface channel is not isolated, the interface is isolated from the bus, 500VAC
Drift	$\pm 50\text{ppm/k}$
Diagnose and report feature configurations	Yes
Diagnostic tests	Communication diagnostics, power diagnostics
Channel mode settings	Disable、 $\pm 10\text{V}$ 、 $0\sim 10\text{V}$ 、 $2\sim 10\text{V}$ 、 $\pm 5\text{V}$ 、 $0\sim 5\text{V}$ 、 $1\sim 5\text{V}$
Output status configuration after shutdown	Keep the current output or output preset
Output status configuration after shutdown	Press the faildown state mode and no longer refresh
Output action display	When the output is valid, the output indicator light is on
Software parameters	
Convert the range of digital quantities	$-20000\sim 20000$ 、 $-32000\sim 32000$ 、 $-27648\sim 27648$
IO process data size	16byte
Error diagnosis	Communication diagnostics, power diagnostics
Sync mode	Synchronization within the same coupler group is supported
IO mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm

stripping length	10mm
Installation method	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC ANTI-INTERFERENCE RATING	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.12.3 Wiring diagram



4.13 DF30-M-4RTD/TC

4.13.1 Part description

Light				
4RTD/TC P☐ ☐ R 1☐ 2☐ 3☐ 4☐	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-4	Green: Channels 1-4 input signal is valid		
		Green extinguished: The signal input to channels 1-4 is invalid		
		Green flashing: When the diagnostic switch for channels 1-4 is turned on, the corresponding channel input fault		

Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	RTD1+	The first channel signal input	B1	RTD1-	The first channel signal input
A2	Sense1+ (TC+)	The first channel signal input	B2	Sense1- (TC-)	The first channel signal input
A3	RTD2+	Second channel signal input	B3	RTD2-	The first channel signal input
A4	Sense2+ (TC+)	Second channel signal input	B4	Sense2- (TC-)	Second channel signal input
A5	RTD3+	The third channel signal input	B5	RTD3-	The third channel signal input
A6	Sense3+ (TC+)	The third channel signal input	B6	Sense3- (TC-)	The third channel signal input
A7	RTD4+	Channel 4 signal input	B7	RTD4-	Channel 4 signal input
A8	Sense4+ (TC+)	Channel 4 signal input	B8	Sense4- (TC-)	Channel 4 signal input
A9	/	Reserve suspension	B9	/	Reserve suspension

4.13.2 Specifications

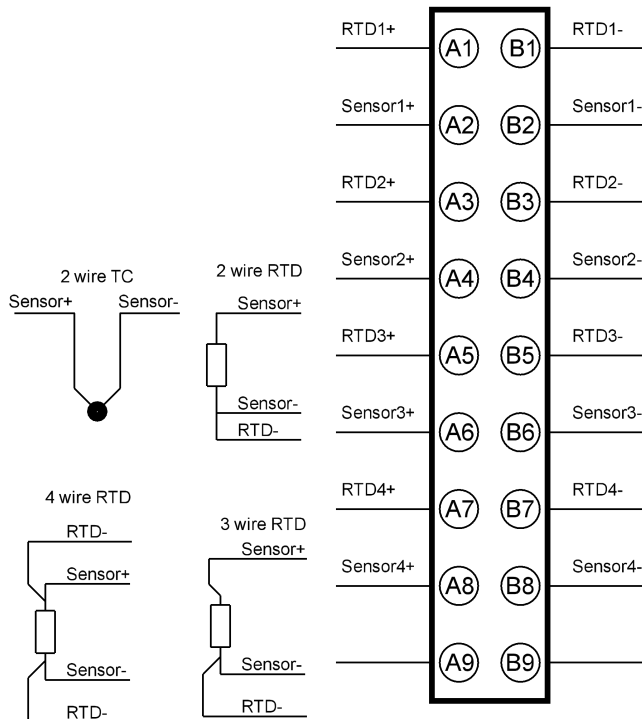
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<60mA (typical at 5V DC)

Functional parameters	
Module type	Thermoresistance thermocouple measurement module
Number of channels	4
Sensor type	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu53, Cu100, KTY83-110, KTY83-120, KTY83-121, KTY83-122, KTY83-150, KTY83-151, KTY84-130, KTY84-150, KTY84-151, 40 Ω , 300 Ω , 500 Ω , 1 k Ω , 2 k Ω , K, E, T, J, B, S, R, N, C, L, $\pm 15.625\text{mV}$, $\pm 31.25\text{mV}$, $\pm 62.5\text{mV}$, $\pm 125\text{mV}$, $\pm 250\text{mV}$, $\pm 500\text{mV}$, $\pm 1000\text{mV}$, $\pm 2000\text{mV}$
Connection	2-wire system, 3-wire system, 4-wire system
Input accuracy (25° C)	Full scale* ($\pm 0.1\%$)
Drift	$\pm 50\text{ppm/K}$, $\pm 0.375\%$
Connection method	Two-wire/three-wire/four-wire system
Whether to quarantine	The interface is isolated from the bus, between the terminal and the power supply, and not between the channels
Channel diagnostics	Over-limit alarm, over-limit alarm, disconnection alarm, overflow error
Diagnose and report feature configurations	Yes
Input action display	When the input signal is valid, the channel input indicator is solid, and when the channel diagnosis is enabled and the input signal is invalid, the channel input indicator flashes
Software parameters	
Sampling period	RTD: 250ms/TC: 500ms、RTD: 500ms/TC: 1000ms、RTD: 1000ms/TC: 2000ms、RTD: 320ms/TC: 640ms (50Hz Frequency suppression)、RTD: 266ms/TC: 532ms (60Hz Frequency suppression)
Filtering method	Sliding window filtering, dejitter filtering, 50HZ\60HZ

	anti-power frequency
Frequency interference suppression	Support 50Hz 60Hz rejection
Data size	8 Byte
Error diagnosis	Communication diagnosis, power supply diagnosis, channel overrun diagnosis, channel disconnection diagnosis
I/O mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27

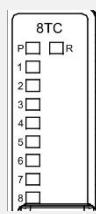
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.13.3 Wiring diagram



4.14 DF30-M-8TC

4.14.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	LED1-8	Green: Channels 1-8 input signal valid		

		Green extinguished: The signal input for channels 1-8 is invalid			
		Green flashing: When the input diagnostic switch on channels 1-8 is turned on, the corresponding channel input fault			
Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	TC1+	Thermocouple input channel1	B1	TC1-	Thermocouple input channel1
A2	TC2+	Thermocouple input channel2	B2	TC2-	Thermocouple input channel2
A3	TC3+	Thermocouple input channel3	B3	TC3-	Thermocouple input channel3
A4	TC4+	Thermocouple input channel4	B4	TC4-	Thermocouple input channel4
A5	TC5+	Thermocouple input channel5	B5	TC5-	Thermocouple input channel5
A6	TC6+	Thermocouple input channel6	B6	TC6-	Thermocouple input channel6
A7	TC7+	Thermocouple input channel7	B7	TC7-	Thermocouple input channel7
A8	TC8+	Thermocouple input channel8	B8	TC8-	Thermocouple input channel8
A9	\	\	B9	\	\

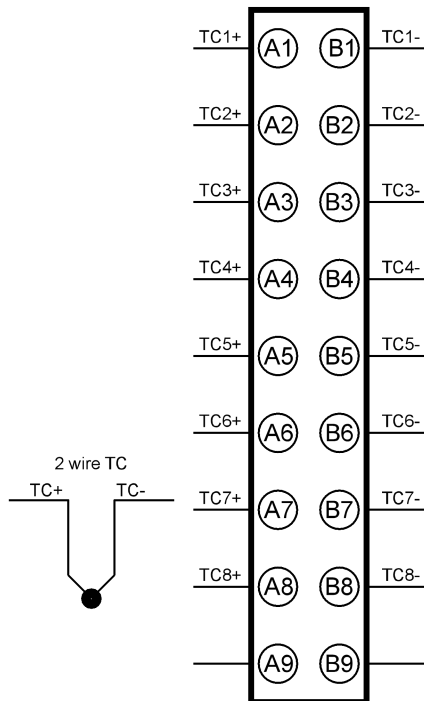
4.14.2 Specifications

Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS	5V DC +20%/-15% (4.25V DC~ 6V DC)

bus input power supply	
The USYS bus input power supply is rated current	<60mA
Functional parameters	
Module type	Analog input
Number of channels	8
Analog input	Thermocouple
Connection type	2-wire system
Display sensitivity	0.1°C
Input terminals	Thermocouple inputs, thermocouple types: K, E, T, J, B, S, R, N, C, L, $\pm 15.625\text{mV}$, $\pm 31.25\text{mV}$, $\pm 62.5\text{mV}$, $\pm 125\text{mV}$, $\pm 250\text{mV}$, $\pm 500\text{mV}$, $\pm 1000\text{mV}$, $\pm 2000\text{mV}$
Compensation method	Internal cold end compensation
Accuracy (normal temperature 25° C)	Thermocouple measurement: ($\pm 0.1\%$) ($\pm 125\text{mV}$ full scale) + cold end compensation error Voltage Measurement: ($\pm 0.1\%$) ($\pm 2000\text{mV}$ Full Scale)
Accuracy (Operating Temperature -20° C~55° C)	Thermocouple measurement: ($\pm 0.3\%$) ($\pm 125\text{mV}$ full scale) + cold end compensation error Voltage measurement: ($\pm 0.3\%$) ($\pm 2000\text{mV}$ full scale)
Whether to quarantine	The interface is isolated from the bus, between the terminal and the power supply, and not between the channels
Input action display	When the output is active, the output indicator light is on (software control)
Software parameters	
Sampling period	500ms、1000ms、2000ms、1280ms (50Hz Frequency suppression)、1064ms (60Hz Frequency suppression)
Filtering method	Sliding window filtering, dejitter filtering, 50HZ\60HZ anti-power frequency
Data size	16 Byte

Error diagnosis	Communication diagnosis, power supply diagnosis, channel overrun diagnosis, channel disconnection diagnosis
I/O mapping	Word-by-word mapping is supported
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.14.3 Wiring diagram



4.15 DF30-M-2CNT

4.15.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	1A/1B/2A /2B	Green light: 1A/1B/2A/2B differential signal input indication, input as the driving state		
		Green extinguishing: 1A/1B/2A/2B differential signal input		

		indication, the input is not the driving state					
	DI1/DI2/ DI3/DI4	Green light: DI1/DI2/DI3/DI4 digital input channel indication, input is in drive status.					
		Green extinguishing: DI1/DI2/DI3/DI4 digital input channel indication, the input is not in the driving state					
	DO1/DO2	Green: DO1/DO2 digital output channel indication, output is driven state					
		Green extinguishing: DO1/DO2 digital output channel indication, the output is not in the driving state					
Terminals							
Serial number	signal	illustrate		Serial number	signal	illustrate	
A1	5V	The 5V power supply outputs the positive electrode		B1	AGND	5V power supply output negative electrode	
A2	1A+	Channel 1A is differentiated into signal+		B2	1A-	Channel 1A phase-differential input signal-	
A3	1B+	Channel 1B phase differential input signal+		B3	1B-	Channel 1B phase differential inputsignal-	
A4	2A+	Channel 2A phase-differential input signal+		B4	2A-	Channel 2A phase-difference input signal-	
A5	2B+	Channel 2B is differentiated into signal+		B5	2B-	Channel 2B Phase-Difference Input signal-	
A6	DI 1	The number input channel1		B6	DI 2	The number input channel2	
A7	DI 3	The number input channel3		B7	DI 4	The number input channel4	

A8	COM	Public end	B8	PE	ground
A9	DO 1	Digital output channel1	B9	DO 2	Digital output channel 2

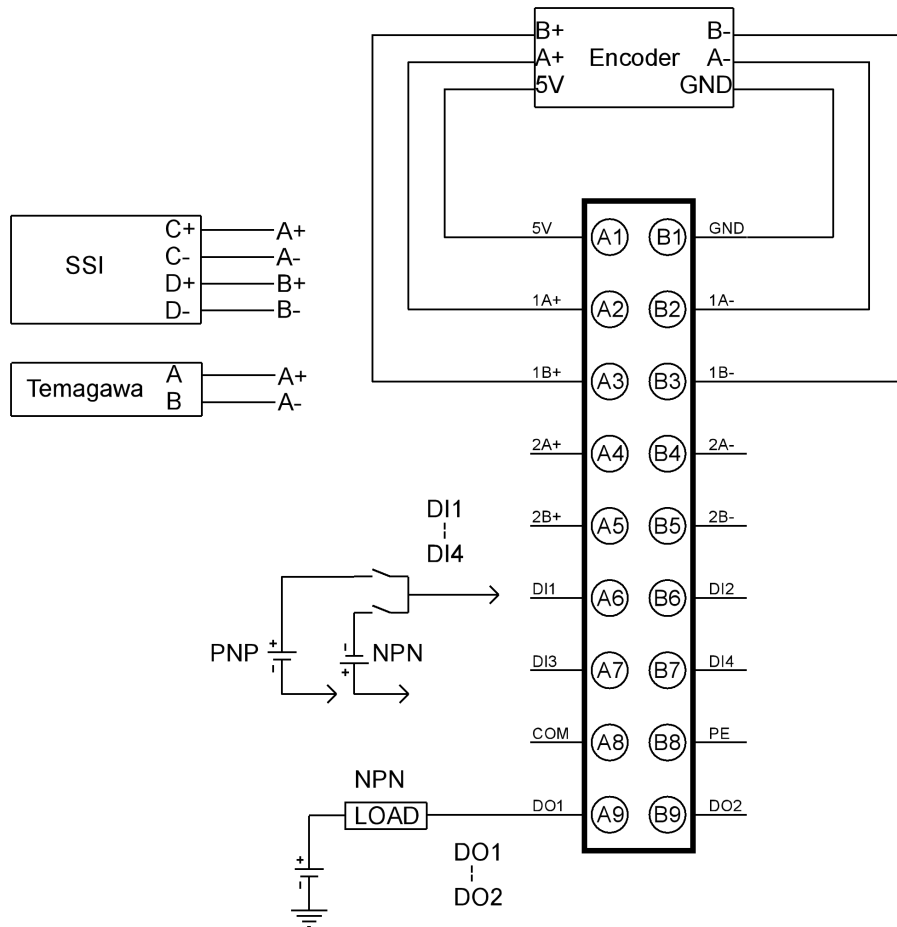
4.15.2 Specifications

Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<50mA (typical at 5V DC)
The terminal output power supply is rated voltage	5V DC
The module prevents the spread of power failures	Yes
Functional parameters	
Differential count input specifications	
Module type	Counter inputs (single-phase pulse plus directional, A-phase, B-phase, AB-phase, SSI)
Input method	Differential input
Number of channels	2
Differential input voltage level	RS422 level (logic 0<200 mA; Logic 1 >200 mA)
Highest input frequency	4Mhz
Count range	32nd place
Frequency measurement range	0.04HZ~4Mhz
Counting accuracy	100ppm
Whether to quarantine	Yes
Input action display	When the input is in the drive state, the input indicator

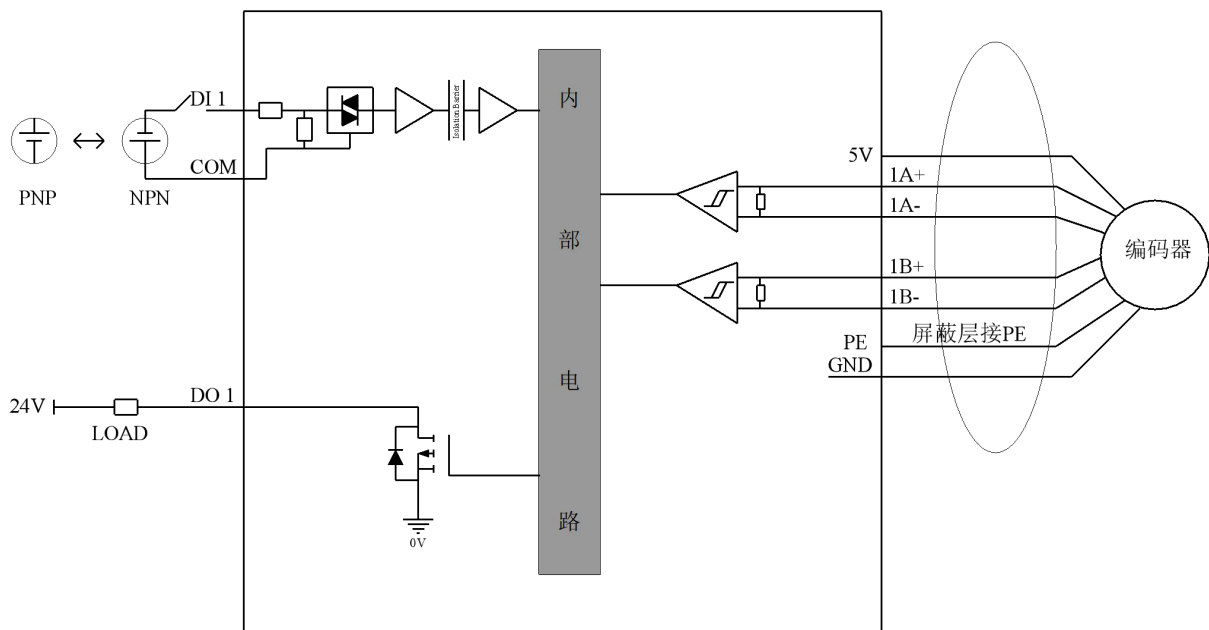
	light is on (hardware control)
Single-ended input specifications	
Input type	Numeric input
Input method	Single-ended input, NPN/PNP
Enter the channel	4 (Counting channels are 2 channels, AB phase per channel)
Frequency measurement range	0.04Hz~500kHz
Input voltage level	24V DC (20.4V DC~28.8V DC)
Input Current (Typical)	50 mA (24V typical)
ON voltage	>15V DC
OFF voltage	<5V DC
Whether to quarantine	Yes
Input action display	When the input is in the drive state, the input indicator light is on (hardware control)
Output specifications	
Output type	Digital output
Output method	NPN
Output channel	2
Output voltage level	24V DC (20.4V DC ~28.8V DC)
Output Load (Resistive Load)	0.5A/point, 1A/module
Output Load (Inductive Load)	7.2W/dot, 1A/module
Output load (light load)	5W/point, 10W/module
Output action display	When the output is in the drive state, the input indicator light is on (hardware control)
Software parameters	
Data size	72 Byte
Error diagnosis	Communication diagnosis and configuration parameter diagnosis
Communication Fault Count status mode	Keep the current count value, clear the count value, and continue counting

Communication fault output state mode	Turn off the output, enable the output, and keep the current output
I/O mapping	Support bit-by-bit, byte-by-byte, and word-by-word mapping
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard
Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4. 15. 3 Wiring diagram



Suitable for differential encoders that output 422 level characteristics, the differential encoder electrical Wiring diagram is shown in the figure below.



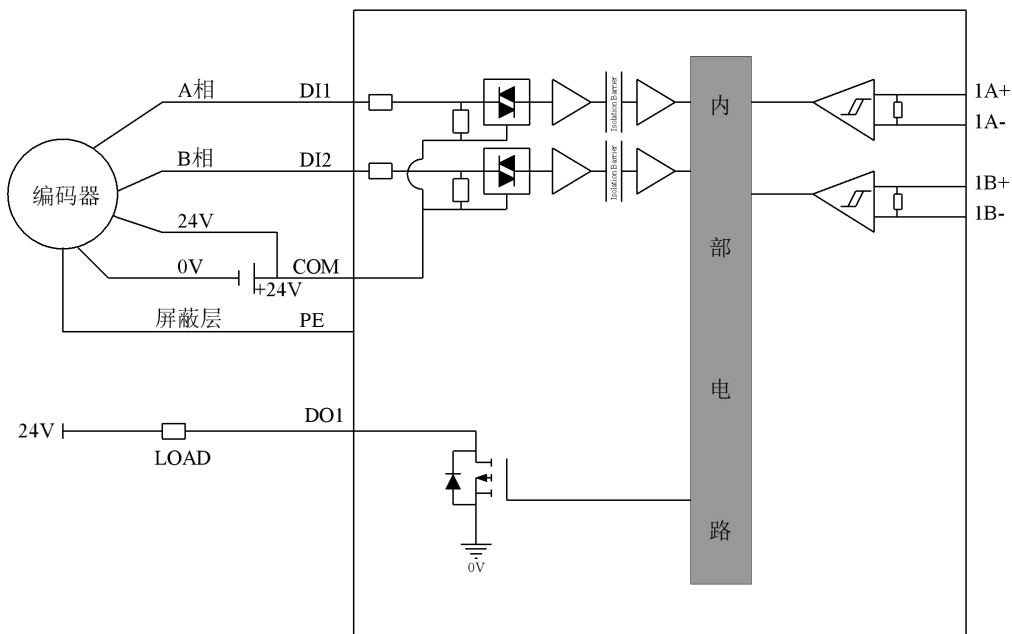
The module supports the connection of two differential encoders: 1A and 1B as a group, and 2A and 2B as a group (the figure shows that 1A and 1B are connected as a group of connections

as an example, and if you need to connect a group of 2A and 2B, the connection method is the same.)

The module supports a maximum of 4-channel DI digital input connections: DI1, DI2, DI3, DI4 (as shown, DI1 is an example; the connection method is the same for DI2, DI3, and DI4.)

The module supports connecting up to two DO digital outputs: DO1 and DO2 (the figure shows DO1 as an example, if you need to connect DO2, the connection method is the same.)

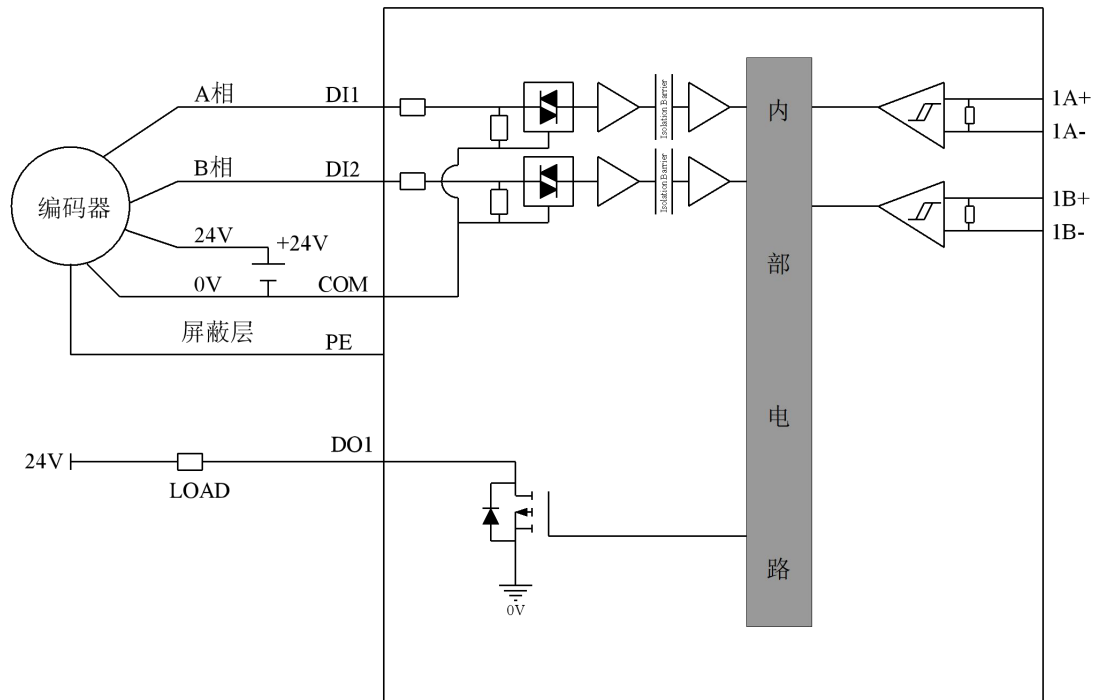
➤ The single-ended encoder of the NPN type is suitable for collector output transistors, and the electrical wiring diagram (NPN type) of the single-ended encoder is shown in the figure below.



The module supports connecting up to two single-ended encoders: DI1 and DI2 as a group, DI3 and DI4 as a group (the figure shows that DI1 and DI2 are connected as a set of connections as an example, and if you need to connect a group of DI3 and DI4, the connection method is the same.))

The module supports the connection of two DO digital outputs: DO1 and DO2 (the figure shows DO1 as an example, if DO2 needs to be connected, the connection method is the same.)

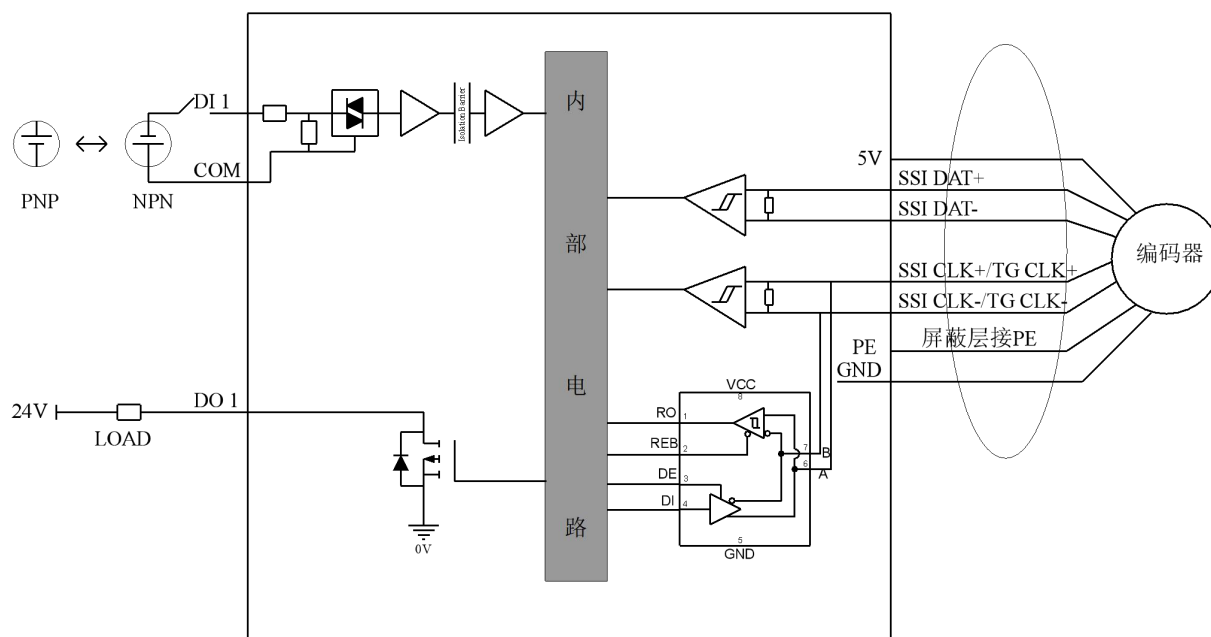
The single-ended encoder of the PNP type is suitable for collector output transistors, and the electrical wiring diagram (NPN type) of the single-ended encoder is shown in the figure below.



The module supports connecting up to two single-ended encoders: DI1 and DI2 as a group, DI3 and DI4 as a group (the figure shows that DI1 and DI2 are connected as a set of connections as an example, and if you need to connect a group of DI3 and DI4, the connection method is the same.)

The module supports connecting up to two DO digital outputs: DO1 and DO2 (the figure shows DO1 as an example, if you need to connect DO2, the connection method is the same.)

➤ Encoder electrical Wiring diagram for SSI and Tama River encoders is shown in the figure below



The module supports the connection of up to 2 SSI encoders/Tama River encoders: 1A and 1B as a group, and 2A and 2B as a group. (The figure shows that 1A and 1B are used as a group of connections as an example, and if you need to connect a group of 2A and 2B, the connection method is the same.))

Notes:

- DF30-M-2CNT the module supports the connection of up to 2 differential encoders: 1A and 1B for channel 1, and 2A and 2B for channel 2.
- DF30-M-2CNT the module supports the connection of up to 2 SSI encoders/Tama River encoders: 1A and 1B for channel 1, and 2A and 2B for channel 2.
- DF30-M-2CNT the module supports a maximum of 4 channels of DI digital input: DI1, DI2, DI3, DI4.
- DF30-M-2CNT the module supports up to 2 DO digital outputs: DO1 and DO2
- DF30-M-2CNT when channel 1 is selected as a single-termination method, DI1 and DI2 correspond to the AB phase of channel 1, and when channel 2 is selected as a single-termination method, DI3 and DI4 correspond to the AB phase of channel 2 respectively.

4.16 DF30-M-1COM-232/485/422
4.16.1 Part description

Light				
	LED No	Status and Meaning	LED No	Status and Meaning
1COM ☐ F ☐ R ☐ TX ☐ COM ☐ RX ☐ MST ☐ SLV ☐ 232 ☐ 485 ☐ 422	PWR	Green: The system power supply is normal	RUN	Green: The module is running normally
		Green extinguishing: The system power supply is abnormal		Green extinguishing: module hardware failure, communication failure
				Green flashing: Configuration failure/failsafe mode
	TX	Green: Data sent	COM	Green Light: Select this mode
		Green extinguishing: No data transmission		Green extinguishing: This mode is not used
	RX	Green light: Data reception	MST	Green Light: Select MASTER mode
		Green extinguishing: No data reception		Green extinguishing: This mode is not used
			SLV	Green: Select SLAVE mode
				Green extinguishing: This mode is not used
			232	Green light: RS232 communication protocol is used
				Green extinguishing: The communication protocol is not used
			485	Green light: RS485 communication protocol is used

				Green extinguishing: The communication protocol is not used	
			422	Green light: RS422 communication protocol is used	
				Green extinguishing: The communication protocol is not used	
Terminals					
Serial number	signal	illustrate	Serial number	signal	illustrate
A1	24Vo	24V power output	B1	0Vo	Power output location
A2	5Vo	5V power output	B2	0Vo	Power output location
A3	TXD+	RS485 data positive end/RS422 transmitting positive end	B3	TXD-	RS485 data negative end/RS422 send negative end
A4	Tres+	RS485 terminal resistor positive/RS422 transmit terminal resistor positive	B4	Tres-	RS485 terminal resistor negative / RS422 transmit terminal resistor negative end
A5	RXD+	RS422 receives positive end	B5	RXD-	RS422 receives negative end
A6	Rres+	RS422 receiver terminal resistor positive end	B6	Rres-	The RS422 receiver terminal resistor is negative
A7	CTS	RS232 clear send	B7	RTS	RS232 sends data requests
A8	RXD	RS232 data reception	B8	TXD	RS232 data transmission
A9	GND	Reference Location	B9	GND	Reference Location

4.16.1 Specifications

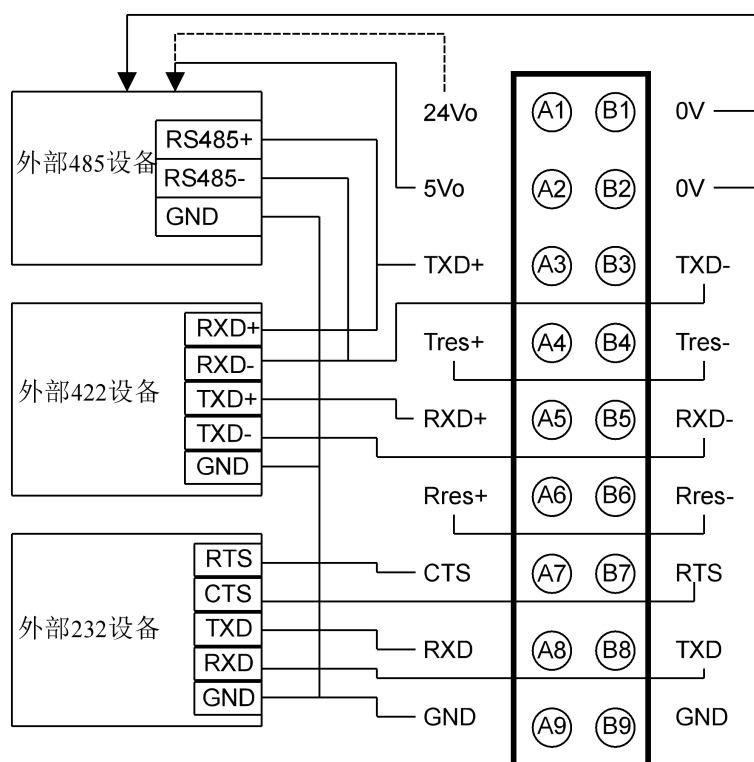
Structural parameters	
Dimensions (WxHxD)	12mm x 100mm x 80mm
Weight	71.5g
Power Parameters	
The rated voltage of the USYS bus input power supply	5V DC +20%/-15% (4.25V DC~ 6V DC)
The USYS bus input power supply is rated current	<60mA (typical at 5V DC)
UIN power supply input rated voltage	24 V DC +20%/-15% (20.4V DC~28.8V DC)
UIN power supply input current rating	4A (typical at 24V DC)
UIN power input anti-reverse plug protection	Yes
The module prevents the spread of power failures	Yes
Functional parameters	
Module type	Communication gateway module
Number of channels	1 way
Communication interface type	The module only supports 1-channel serial port communication 1 RS232 1 RS485 1 RS422
Communication distance	RS232: up to 15m RS422/RS485: Max. 1200m
Whether to quarantine	Yes, the channels are isolated from the interior, and the channels are not isolated
Terminal matching resistors	Short connection at the near end of the terminal resistor

	port through the user's external wiring selection
Output load	Voltage standard value 24V, maximum current: 200mA; Voltage standard value 5V, maximum current: 500mA Two output loads can be output simultaneously
Software parameters	
Data size	A maximum of 128 bytes per channel
Error diagnosis	Take the initiative to report
Number of modules supported	A single coupler can mount up to 6 modules
Number of channels	Supports up to 18 channels
Modbus protocol	RTU
Data transmission baud rate	1200 bps~4687500 bps (default 9600 bps)
Working mode	Modbus Master/Modbus Slave/Free Transmission (Default Modbus Master)
Communication interface	RS485/RS232/RS422 (default RS485)
Data bits	7-bit/8-bit (default 8-bit needs to be checked when configured as 7-bit)
Check position	No check/odd/even check
Starting position	1st place
Stop position	1-bit, 2-bit (default 1-bit)
Frame interval time	The interval between receiving the slave response and sending it again in master mode is 0~65535, in ms.
Response timeout	The master waits for the timeout time for the slave station to respond, or the timeout time for the response in transparent mode.
Polling time	The delay between when the master receives the response message from the slave to the next command is sent in the range 0~65535, in ms.
Read timeout	Keep last input/clear input value

Data output mode	Polling mode/event triggering/level triggering/rising edge triggering. (Event trigger is data output when the output data changes, level trigger is the communication when the main station channel control word is 1, and rising edge trigger is triggered communication when the main station channel control word is 0 to 1)
Slave Station ID	The module works in the ID number of the slave.
Response delay	The working mode is to receive a message from the master station when the slave station is received, and the delay response is made to the master station and the unit ms.
Byte order conversion	The working mode is to exchange every two transmitting and receiving data positions during free transmission.
Wiring parameters	
Connectivity technology	PUSH-IN type terminals
Connection type	System/field power/input
Crimping area of the wire	0.34~1.5mm
Stripping length	10mm
Installation method	DIN-35 type rail
Material parameters	
Color	Pantone 419C
Shell material	PC plastic
Environmental requirements	
Allowable ambient temperature (during operation)	-20~55°C
Allowable ambient temperature (storage)	-40~85°C
Types of protection	IP20
Contamination level	2. Comply with IEC 61131-2 standard

Working altitude	0~2000m
Relative humidity (non-condensing)	5~95%RH
Anti-vibration	1g, in accordance with IEC 60068-2-6 standard
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC anti-interference rating	Zone B, IEC61131-2
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4.16.1 Wiring diagram



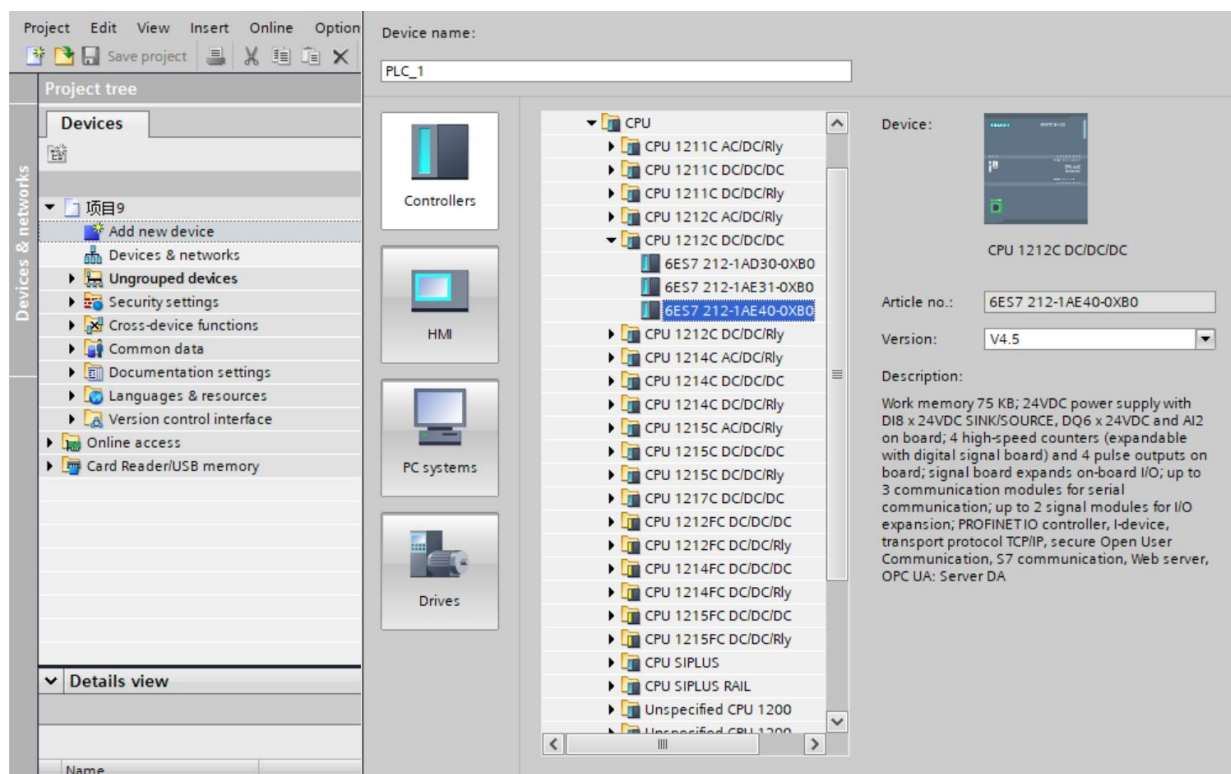
5 Configuration example

5.1 CPU1211C as the main station in the Botu V16 software environment configuration routine

An example uses Siemens' S7-1200 CPU1211C 6ES7 211-1BE40-0XB0 as the PLC, DF30-C-PN-RT as the adapter, and DF30-M-16DO-N as the remote IO module.

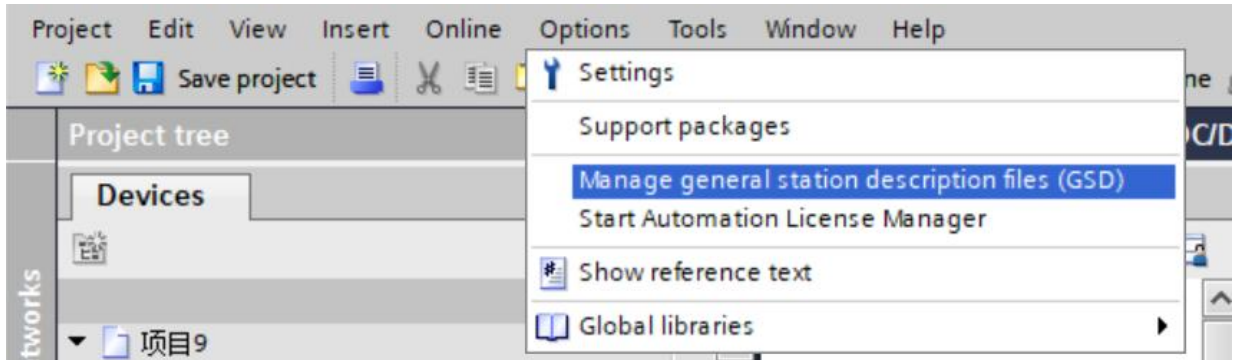
1 Add a controller

Click Add new device, then select the corresponding controller, and click OK after selecting.

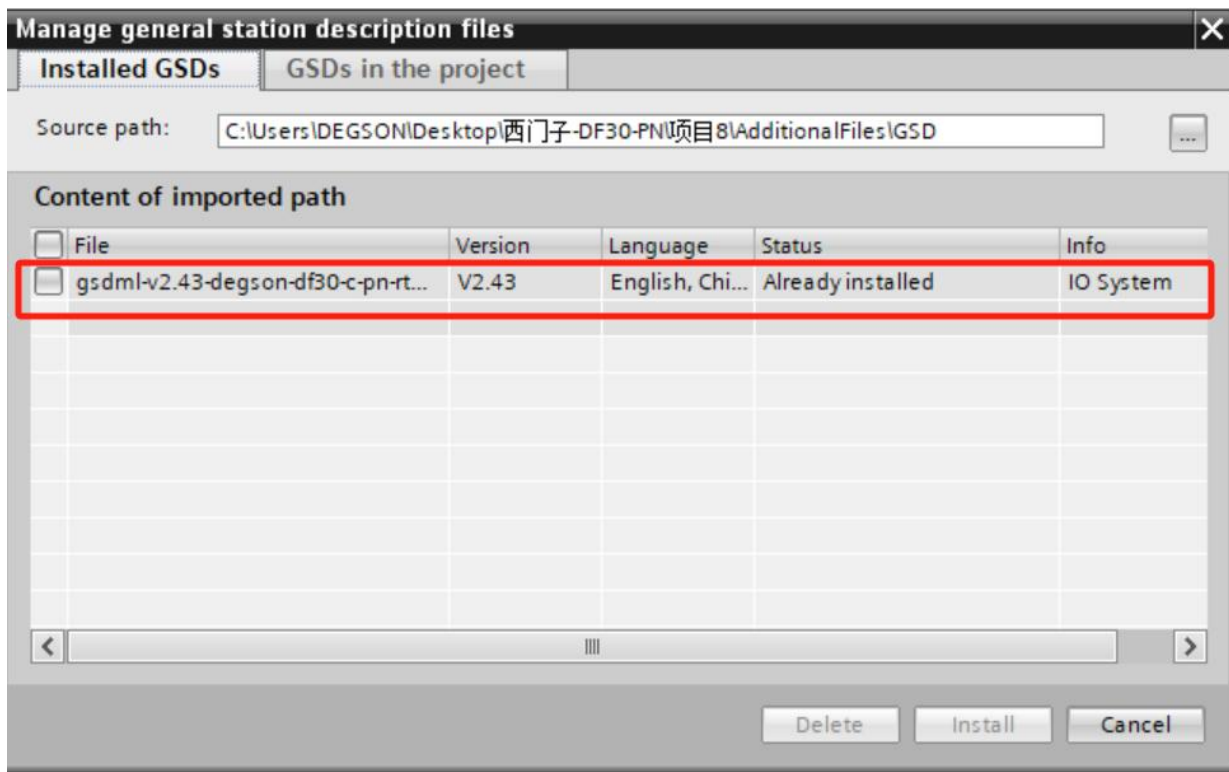


■ Import the GSD file

Click "Options" above, then click "Manage General Station Profiles (GSDs)"

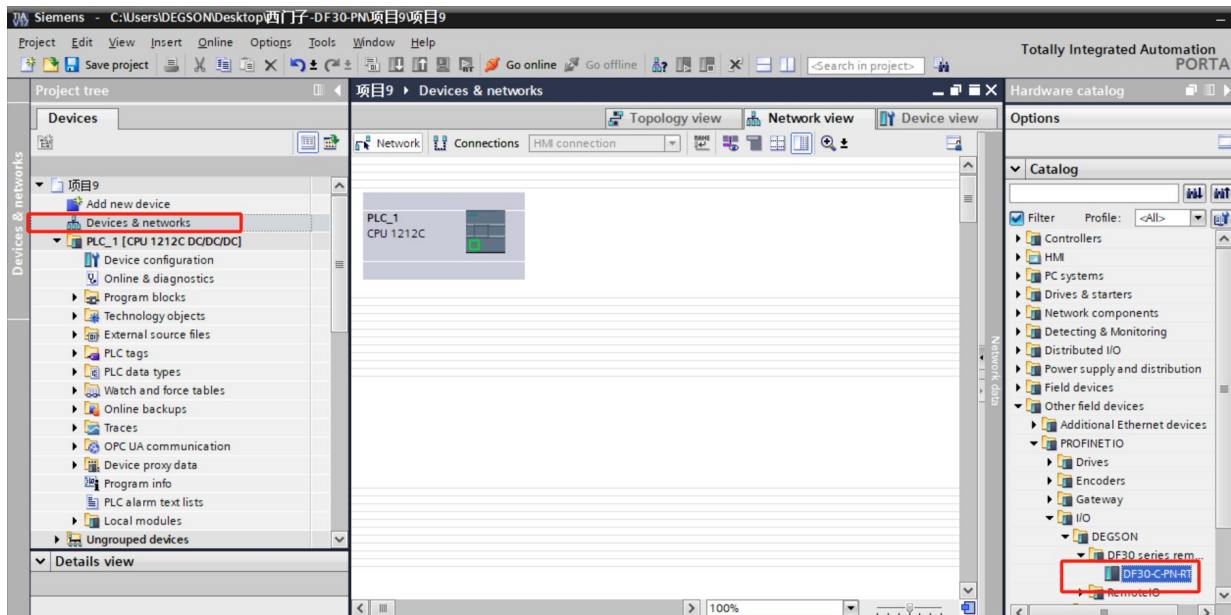


Click the original path to select the GSD file path, and then click Install.

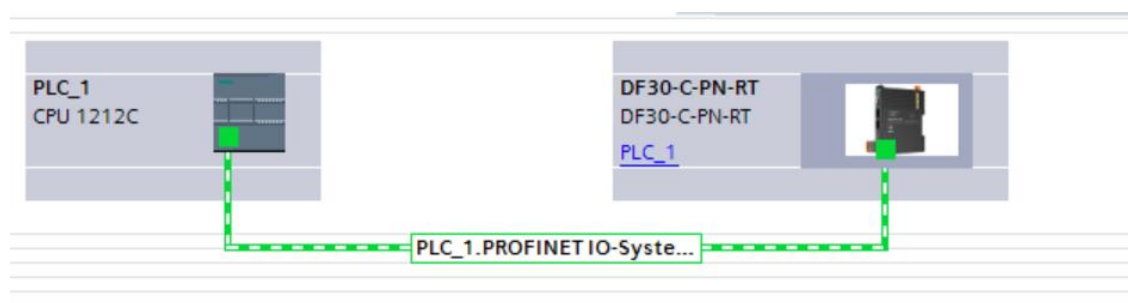


■ Add an adapter

Double-click Devices & Networks, then expand "Other filed devices" in the right directory, then "PROFINET I/O", then "I/O", then "DEGSON", then "Remote I/O", and double-click "DF30-C-PN-RT".

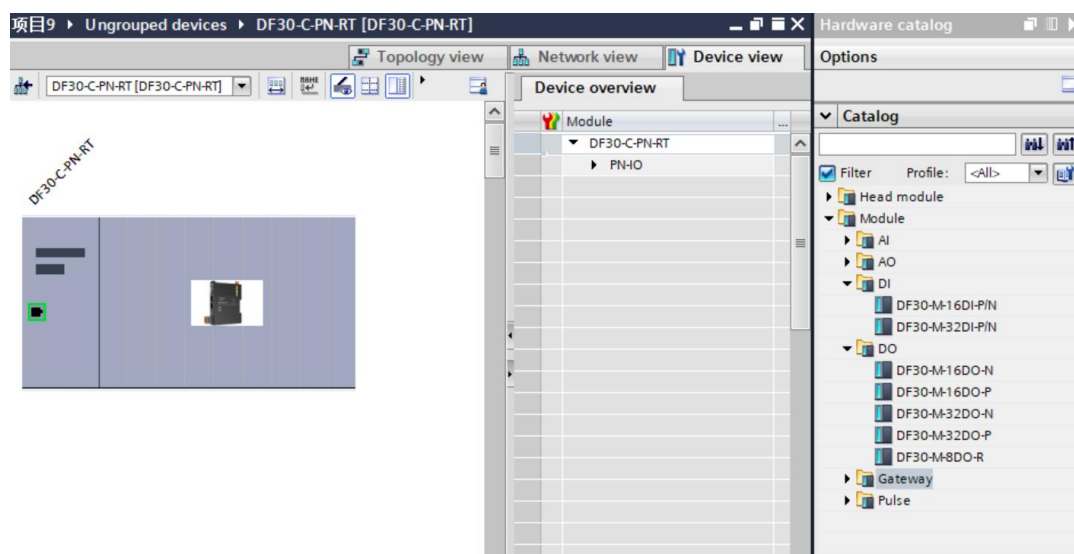


Then connect the PLC and the adapter, and assign the device name to the adapter.



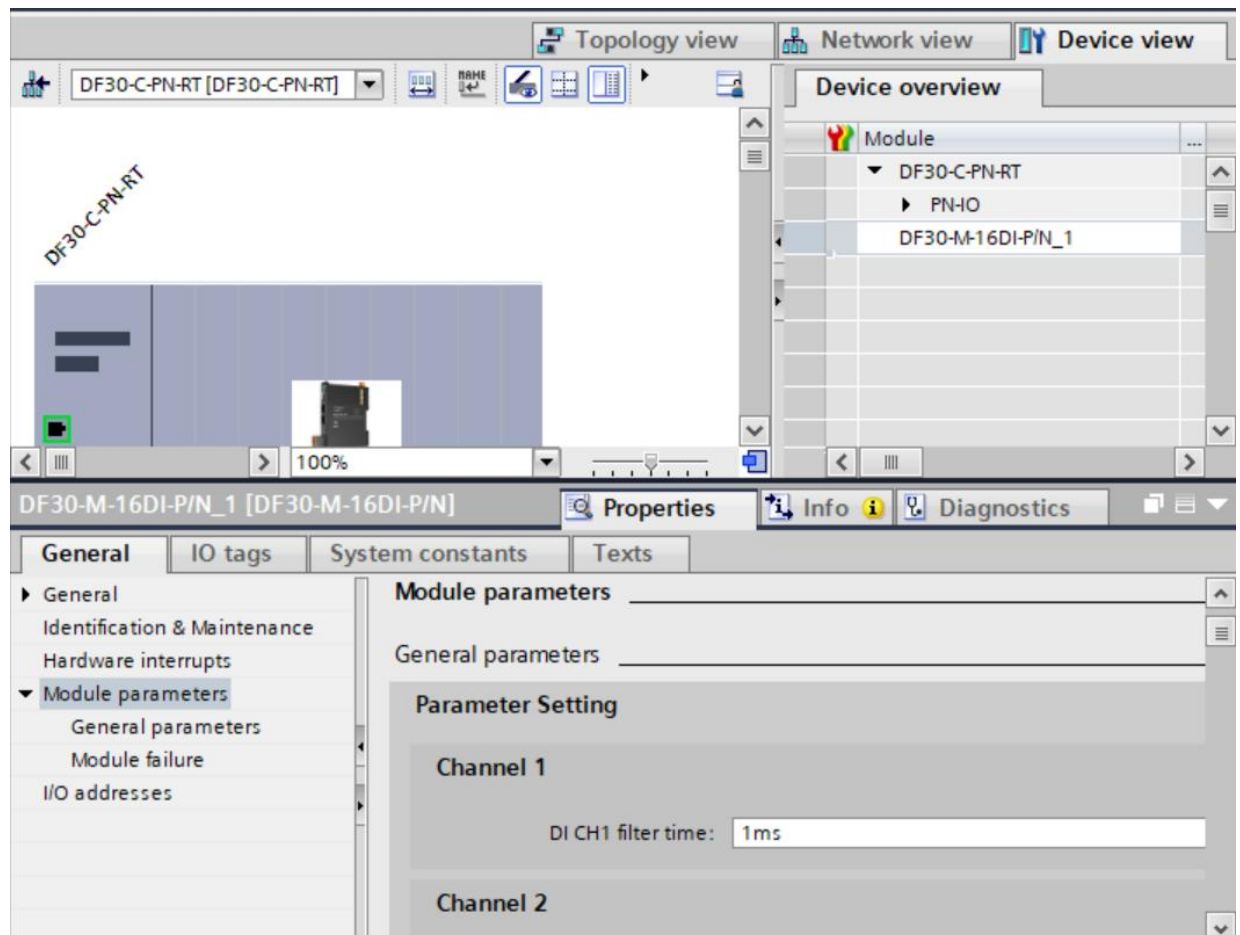
■ Add a remote I/O module

Double-click the adapter and expand "Module", then expand "DO" and then double-click "DF30-M-16DO-N"



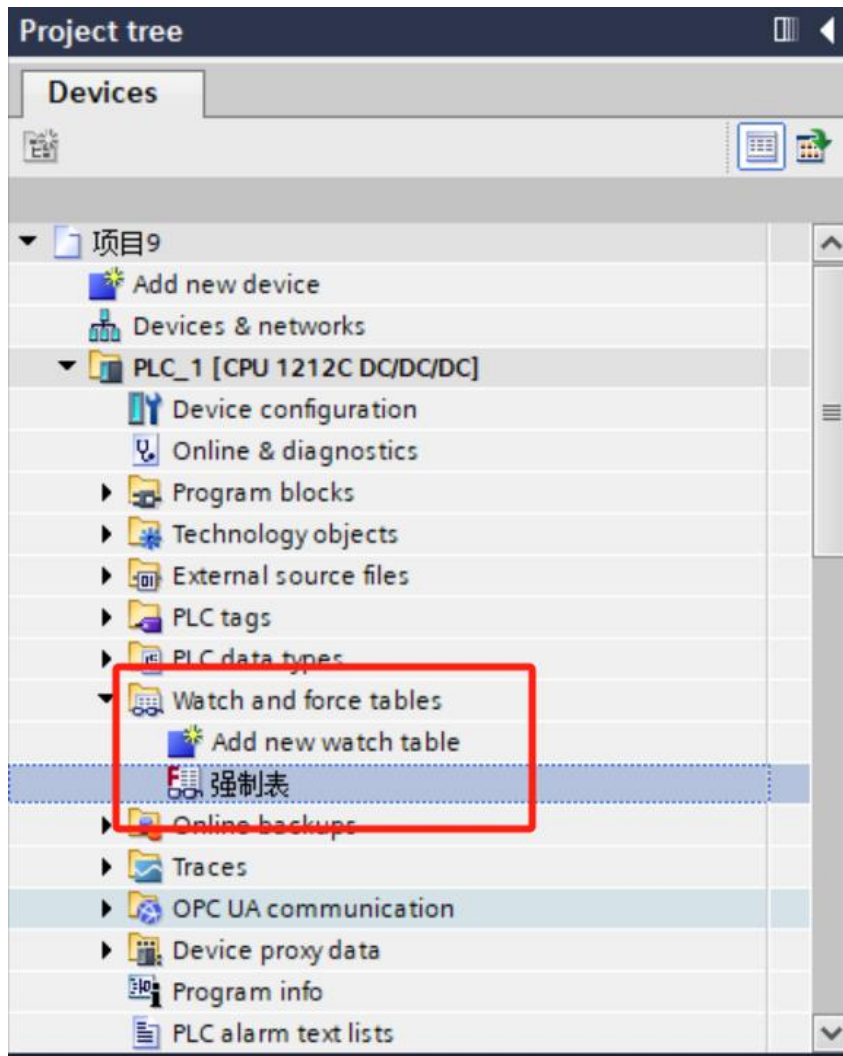
2 Parameter configuration

Remote I/O modules can be parameterized according to needs, and then click Properties to set the action when the module overcurrent output (automatically retry or turn off the output), and the output state after each channel is disconnected (output preset value or keep output).



■ Data reads and writes

As shown in the figure below, adding a new monitoring table can monitor the data received by the I/O module or force the output data to be modified, which is convenient for us to debug.



Double-click the adapter in the device and network view, and the following window appears, and the system automatically assigns the I address (input address) and Q address (output address) to the IO module.

模块	...	机架	插槽	I 地址	Q 地址	类型
▼ DF30-C-PN-RT		0	0			DF30...
▶ PN-IO		0	0 X1			DF30...
DF30-M-16DO-N_1		0	1		1...2	DF30...
DF30-M-16DI-P/N_1		0	2	1...2		DF30...
		0	3			

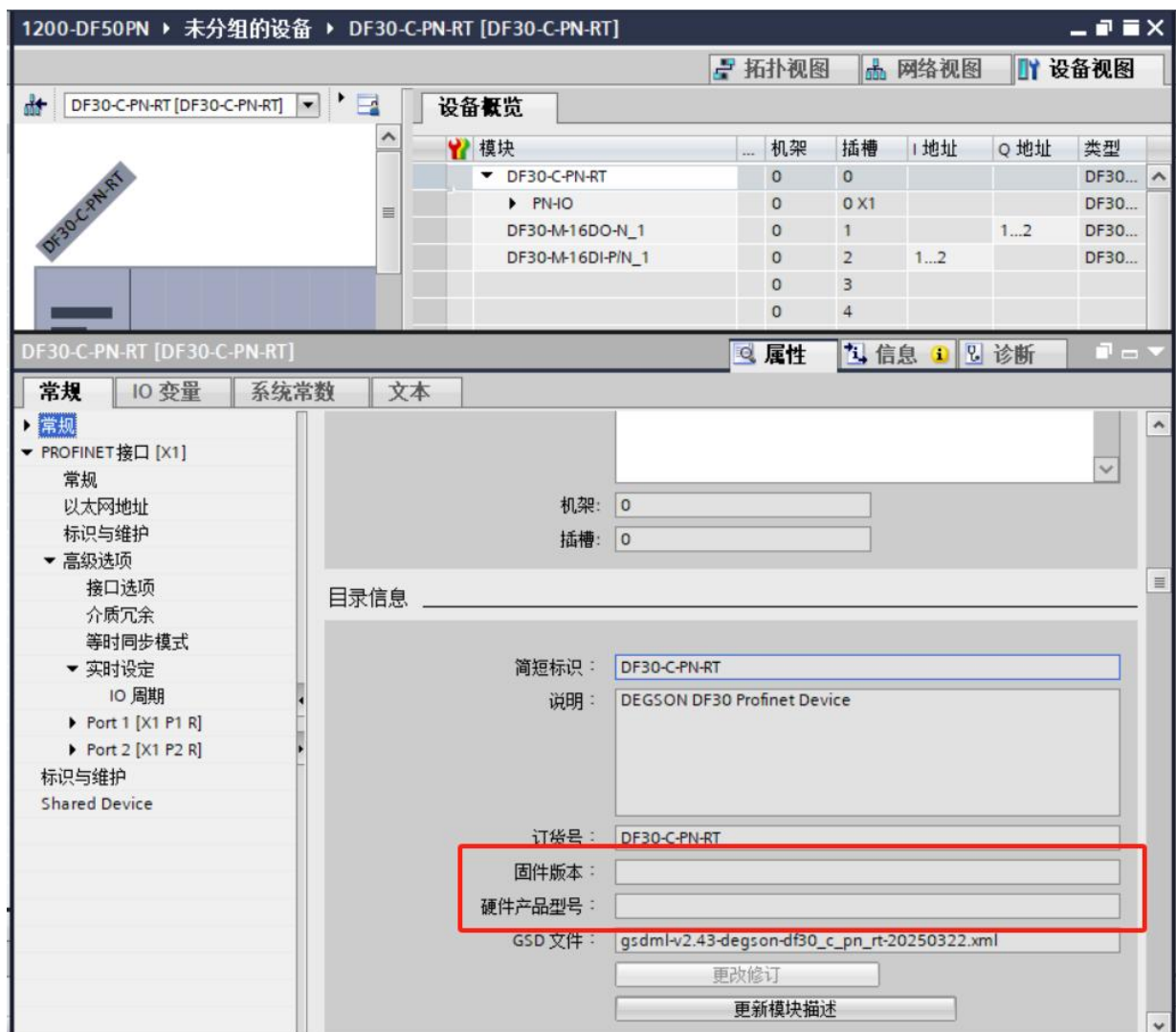
According to the output address of the module, you can see the DO output status of each channel, and changing the channel value to TRUE can make the corresponding channel output valid model.

	i	名称	地址	显示格式	监视值	修改值		注释
1			%Q1.0	布尔型	☒ TRUE	TRUE	☒ !	DO Ch1
2			%Q1.1	布尔型	☐ FALSE		☐	DO Ch2
3			%Q1.2	布尔型	☐ FALSE		☐	DO Ch3
4			%Q1.3	布尔型	☐ FALSE		☐	DO Ch4
5			%Q1.4	布尔型	☐ FALSE		☐	DO Ch5
6			%Q1.5	布尔型	☐ FALSE		☐	DO Ch6
7			%Q1.6	布尔型	☐ FALSE		☐	DO Ch7
8			%Q1.7	布尔型	☐ FALSE		☐	DO Ch8
9			%Q2.0	布尔型	☐ FALSE		☐	DO Ch9
10			%Q2.1	布尔型	☐ FALSE		☐	DO Ch10
11			%Q2.2	布尔型	☐ FALSE		☐	DO Ch11
12			%Q2.3	布尔型	☐ FALSE		☐	DO Ch12
13			%Q2.4	布尔型	☐ FALSE		☐	DO Ch13
14			%Q2.5	布尔型	☐ FALSE		☐	DO Ch14
15			%Q2.6	布尔型	☐ FALSE		☐	DO Ch15
16			%Q2.7	布尔型	☒ TRUE	TRUE	☒ !	DO Ch16

3 Firmware version query

After linking the coupler with the PLC, you can query the coupler firmware version through

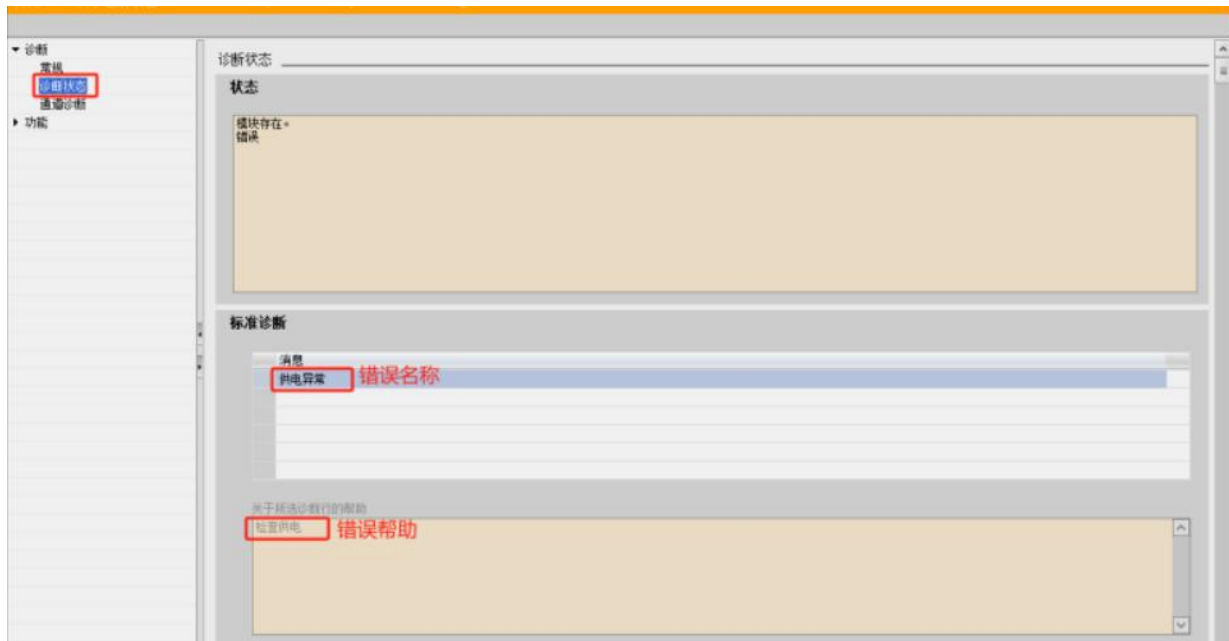
Botu configuration:



4 Error display

When certain errors occur with the coupler or the module that the coupler is inserted

into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

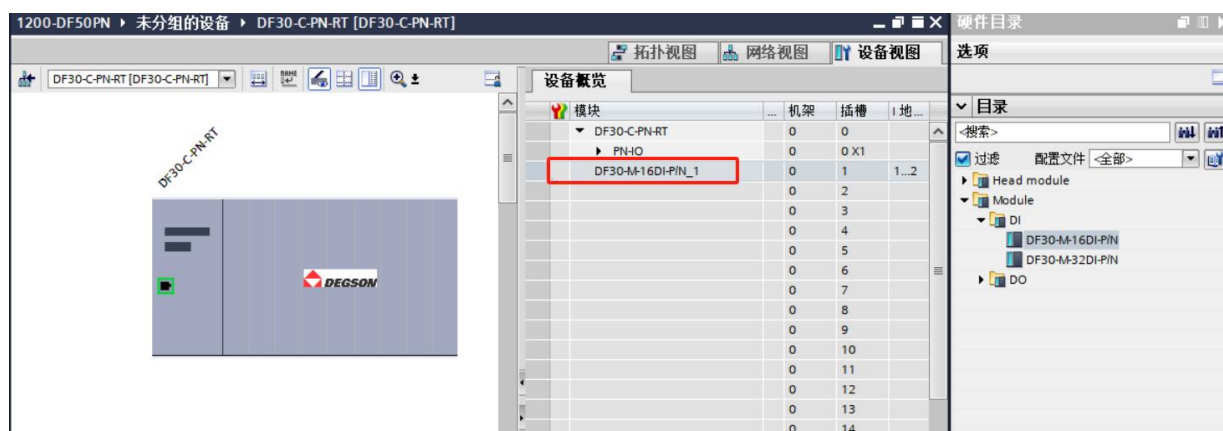
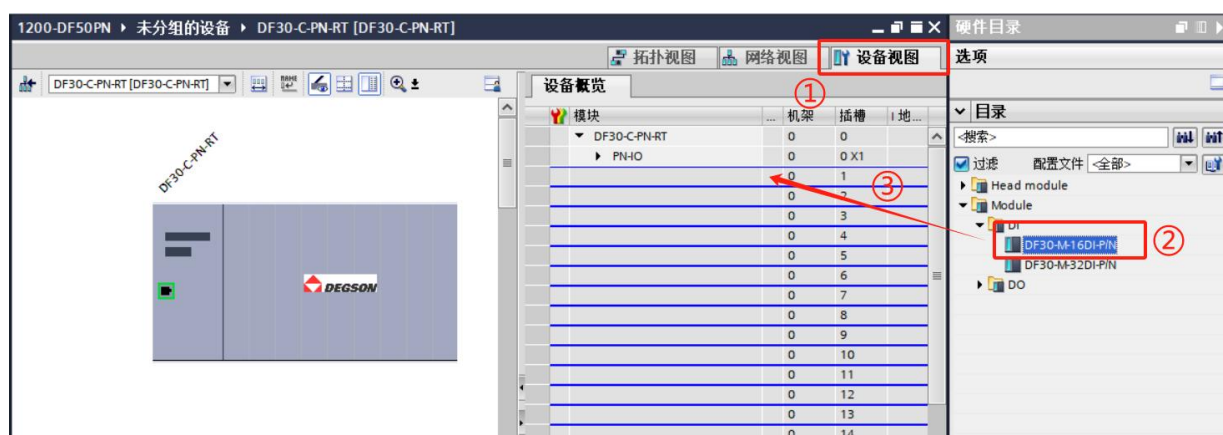
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration

		parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.2 DF30-M-16DI-P/N

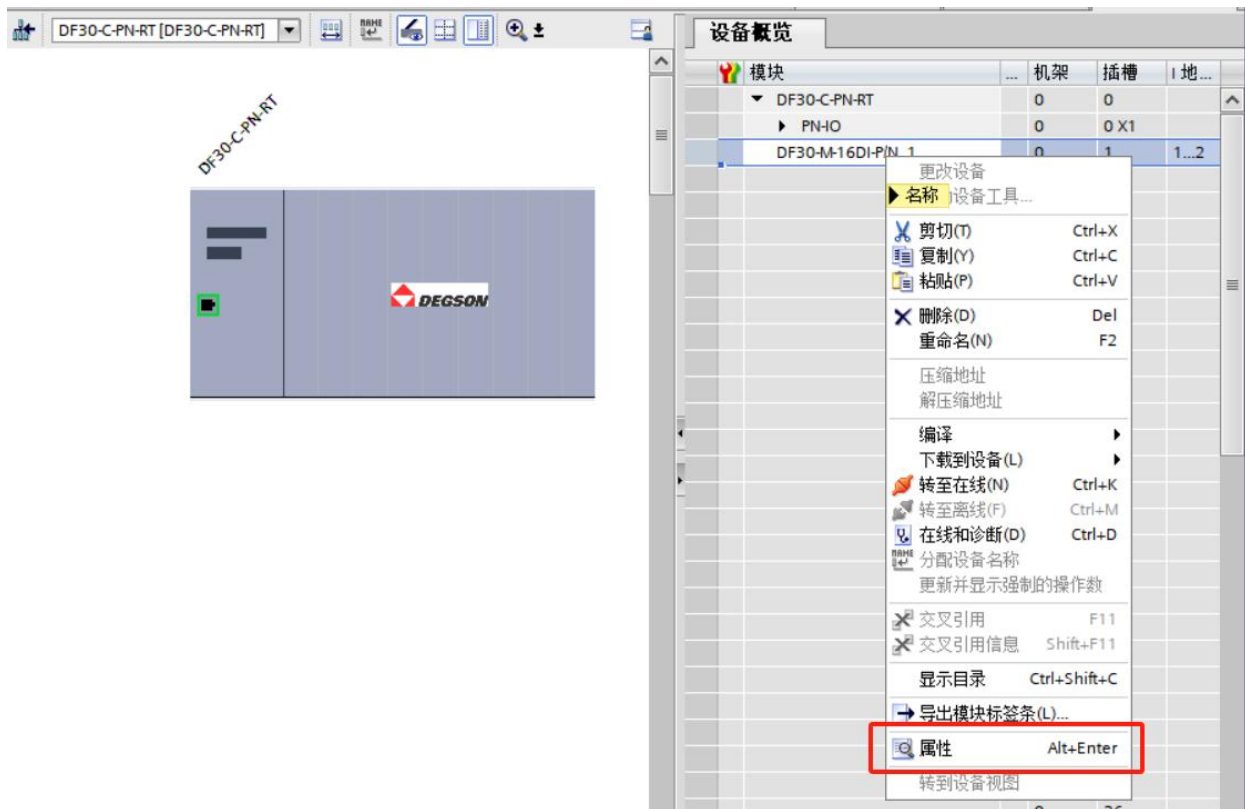
1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-16DI-P/N in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-16DI-P/N module and right-click to select the Properties option



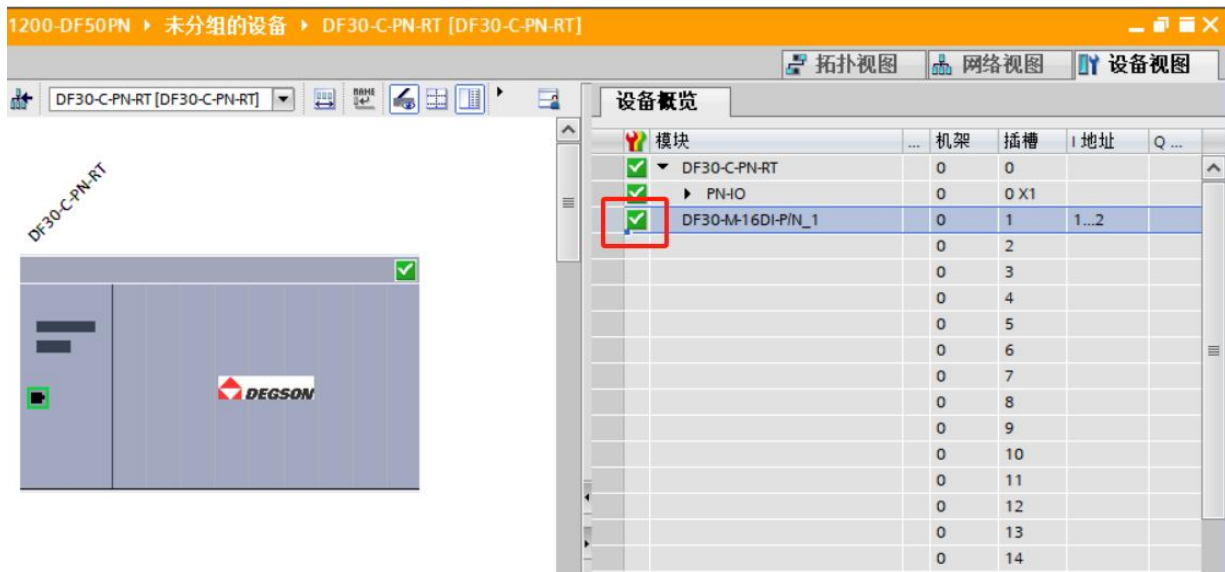
3 Data monitoring

According to the data address of the module, the DI input status of each channel can be collected, TRUE is with valid signal input, FALSE is no effective signal input.

地址	显示格式	监视值	修改值		注释
%I1.0	布尔型	☒ TRUE		☐	DI CH1
%I1.1	布尔型	☐ FALSE		☐	DI CH2
%I1.2	布尔型	☐ FALSE		☐	DI CH3
%I1.3	布尔型	☐ FALSE		☐	DI CH4
%I1.4	布尔型	☐ FALSE		☐	DI CH5
%I1.5	布尔型	☐ FALSE		☐	DI CH6
%I1.6	布尔型	☐ FALSE		☐	DI CH7
%I1.7	布尔型	☐ FALSE		☐	DI CH8
%I2.0	布尔型	☐ FALSE		☐	DI CH9
%I2.1	布尔型	☐ FALSE		☐	DI CH10
%I2.2	布尔型	☐ FALSE		☐	DI CH11
%I2.3	布尔型	☐ FALSE		☐	DI CH12
%I2.4	布尔型	☐ FALSE		☐	DI CH13
%I2.5	布尔型	☐ FALSE		☐	DI CH14
%I2.6	布尔型	☐ FALSE		☐	DI CH15
%I2.7	布尔型	☐ FALSE		☐	DI CH16
<新增>				☐	

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded

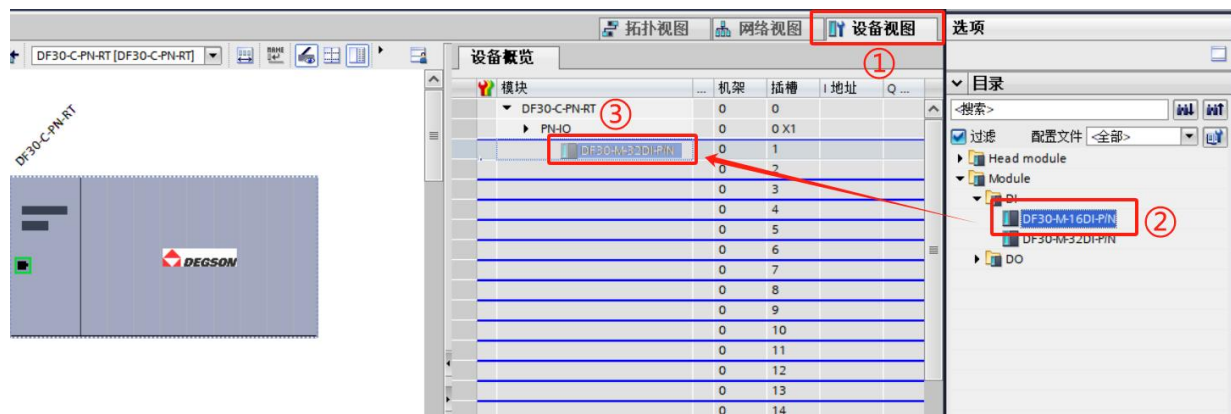
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module

	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.3 DF30-M-32DI-P/N

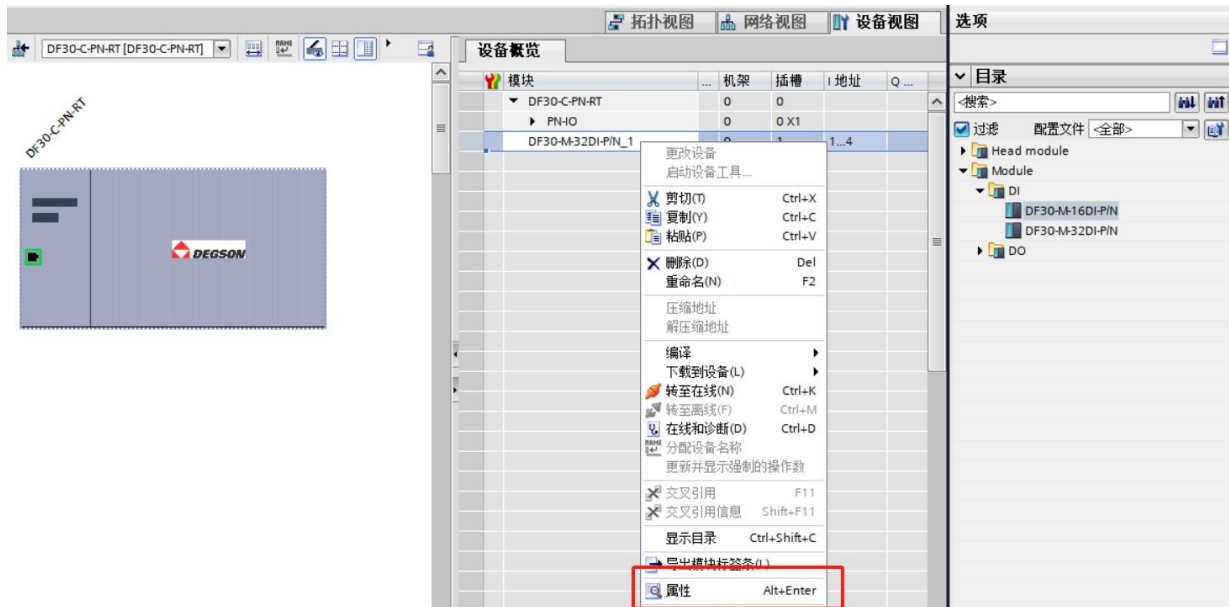
1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-32I-P/N in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-32DI-P/N module and right-click to select the Properties option



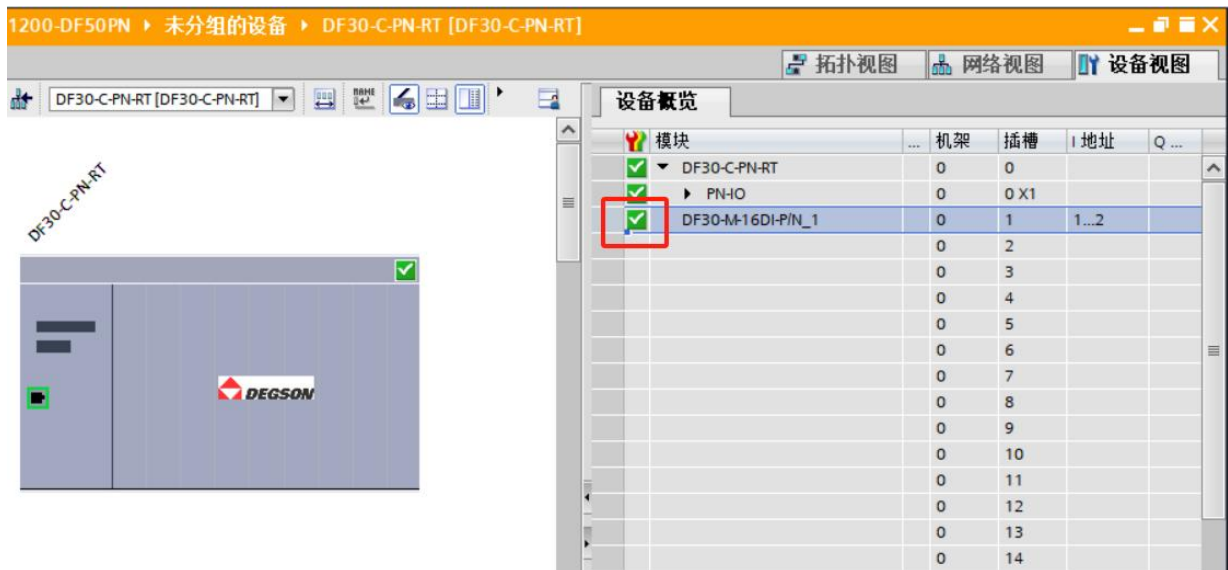
3 Data monitoring

According to the data address of the module, the DI input status of each channel can be collected, TRUE is with valid signal input, FALSE is no effective signal input.

地址	显示格式	监视值	修改值		注释
%I1.0	布尔型	☒ TRUE		☐	DI CH1
%I1.1	布尔型	☐ FALSE		☐	DI CH2
%I1.2	布尔型	☐ FALSE		☐	DI CH3
%I1.3	布尔型	☐ FALSE		☐	DI CH4
%I1.4	布尔型	☐ FALSE		☐	DI CH5
%I1.5	布尔型	☐ FALSE		☐	DI CH6
%I1.6	布尔型	☐ FALSE		☐	DI CH7
%I1.7	布尔型	☐ FALSE		☐	DI CH8
%I2.0	布尔型	☐ FALSE		☐	DI CH9
%I2.1	布尔型	☐ FALSE		☐	DI CH10
%I2.2	布尔型	☐ FALSE		☐	DI CH11
%I2.3	布尔型	☐ FALSE		☐	DI CH12
%I2.4	布尔型	☐ FALSE		☐	DI CH13
%I2.5	布尔型	☐ FALSE		☐	DI CH14
%I2.6	布尔型	☐ FALSE		☐	DI CH15
%I2.7	布尔型	☐ FALSE		☐	DI CH16
<新增>				☐	

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
----------------	------------	------------------

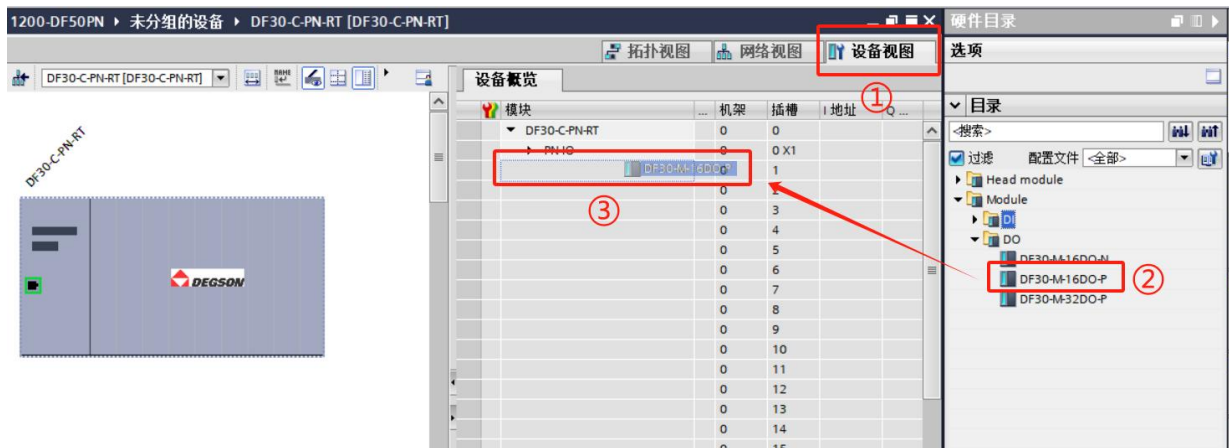
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel;

		The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.4 DF30-M-16D0-P

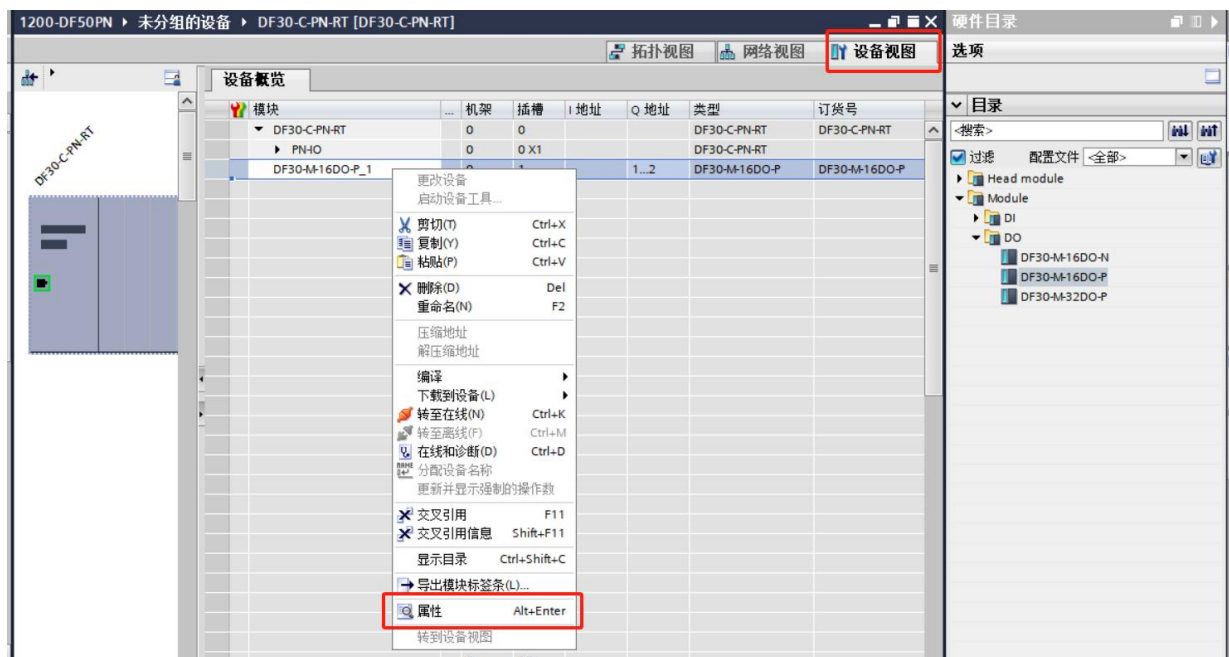
1 Add a module

- ①Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ②Select DF30-M-16D0-P in the hardware catalog
- ③Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-16DO-P module and right-click to select the Properties option



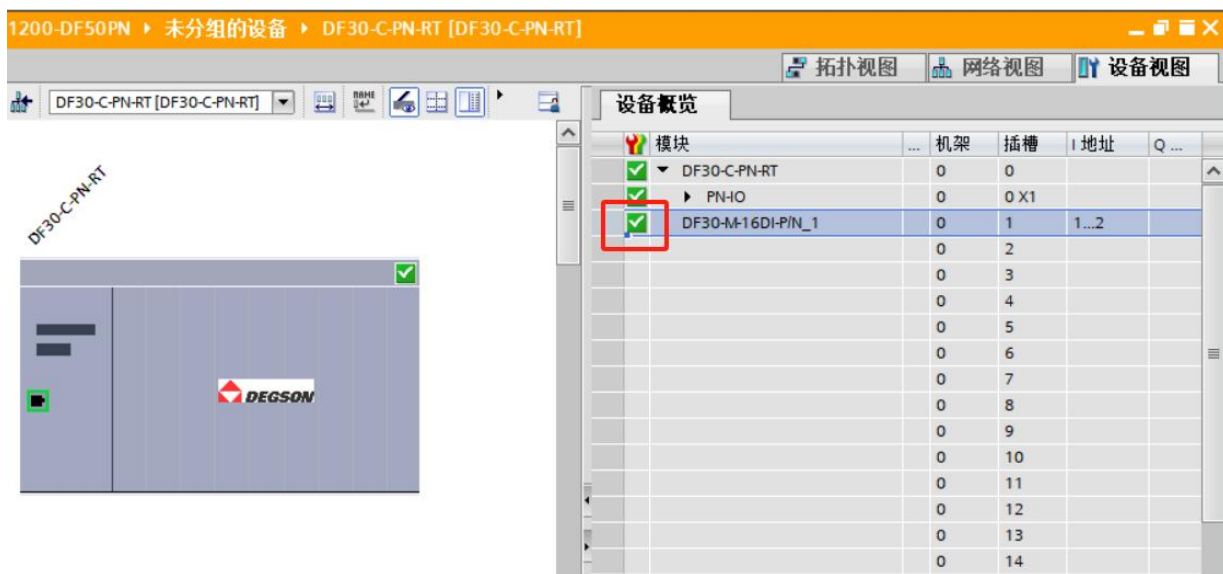
3 Data monitoring

According to the data address of the module, the D0 output status of each channel can be collected, TRUE is the effective signal output, and FALSE is the no effective signal output.

	i	名称	地址	显示格式	监视值	修改值		注释
1			%Q1.0	布尔型	☒ TRUE	TRUE	☒ 	DO Ch1
2			%Q1.1	布尔型	☐ FALSE		☐	DO Ch2
3			%Q1.2	布尔型	☐ FALSE		☐	DO Ch3
4			%Q1.3	布尔型	☐ FALSE		☐	DO Ch4
5			%Q1.4	布尔型	☐ FALSE		☐	DO Ch5
6			%Q1.5	布尔型	☐ FALSE		☐	DO Ch6
7			%Q1.6	布尔型	☐ FALSE		☐	DO Ch7
8			%Q1.7	布尔型	☐ FALSE		☐	DO Ch8
9			%Q2.0	布尔型	☐ FALSE		☐	DO Ch9
10			%Q2.1	布尔型	☐ FALSE		☐	DO Ch10
11			%Q2.2	布尔型	☐ FALSE		☐	DO Ch11
12			%Q2.3	布尔型	☐ FALSE		☐	DO Ch12
13			%Q2.4	布尔型	☐ FALSE		☐	DO Ch13
14			%Q2.5	布尔型	☐ FALSE		☐	DO Ch14
15			%Q2.6	布尔型	☐ FALSE		☐	DO Ch15
16			%Q2.7	布尔型	☐ FALSE		☐	DO Ch16

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



1200-DF50PN > 未分组的设备 > DF30-C-PN-RT [DF30-C-PN-RT]

DF30-C-PN-RT [DF30-C-PN-RT]

拓扑视图 网络视图 设备视图

设备概览

模块	机架	插槽	地址	Q...
DF30-C-PN-RT	0	0		
PN-IO	0	0 X1		
DF30-M16DI-PIN_1	0	1	1...2	
	0	2		
	0	3		
	0	4		
	0	5		
	0	6		
	0	7		
	0	8		
	0	9		
	0	10		
	0	11		
	0	12		
	0	13		
	0	14		

5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration I/O module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to

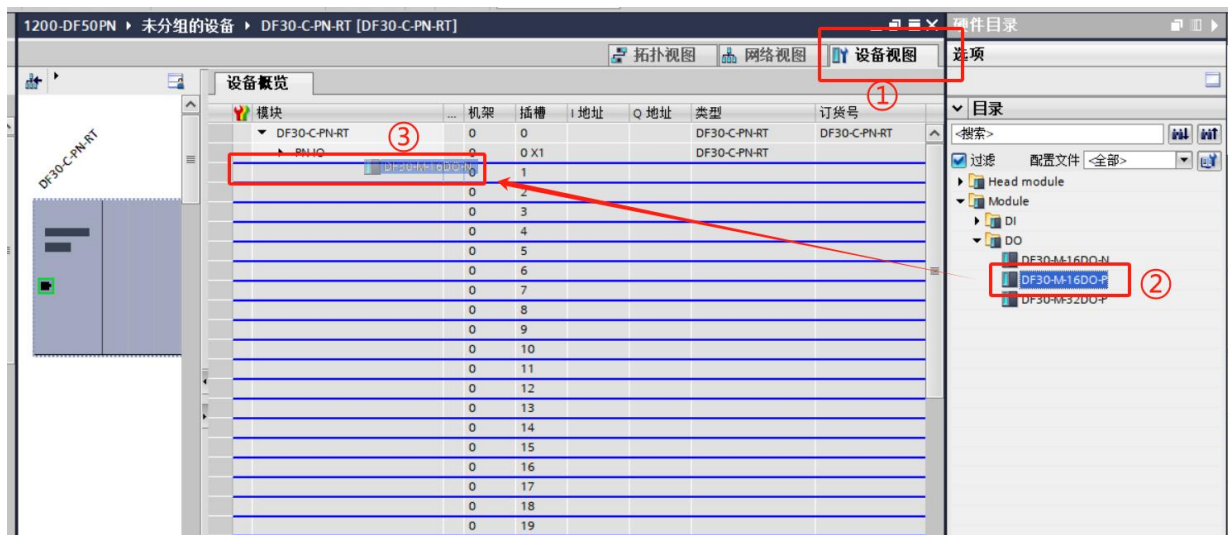
		resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the

		configuration item match
--	--	--------------------------

5.5 DF30-M-16D0-N

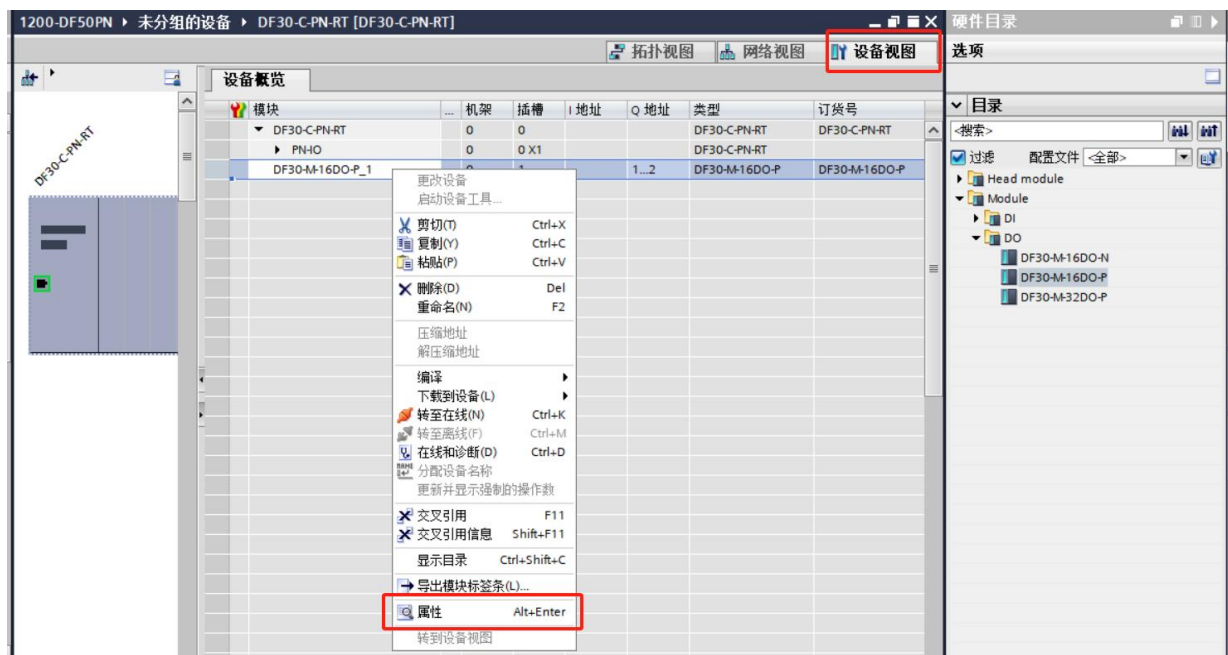
1 Add a module

- ①Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ②Select DF30-M-16D0-N from the hardware catalog
- ③Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-16DO-N module and right-click to select the property option



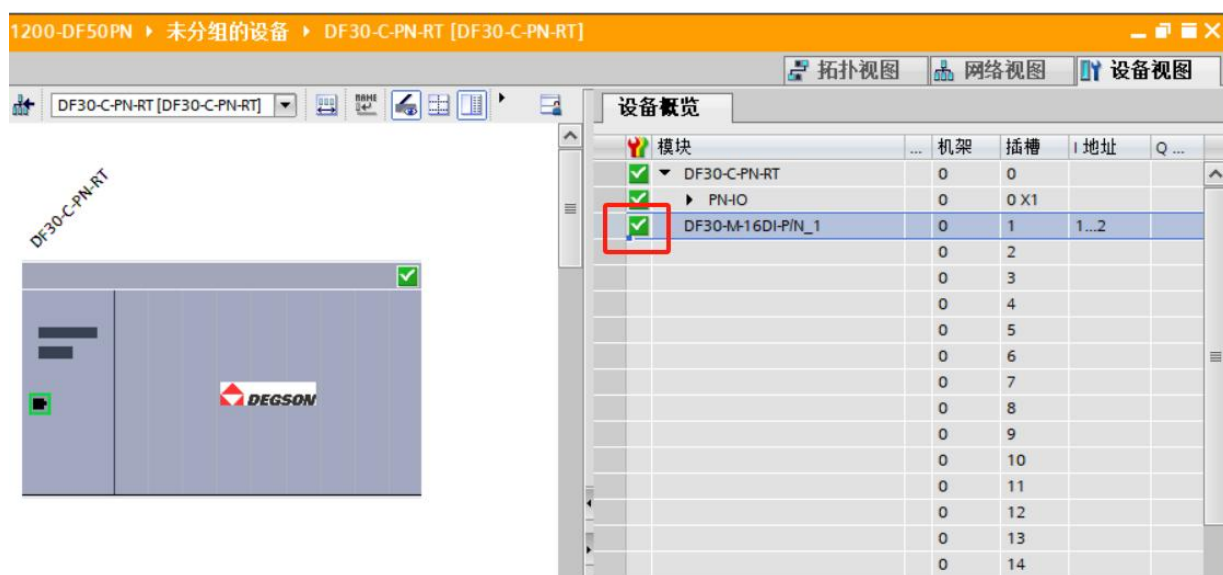
3 Data monitoring

According to the data address of the module, the DO output status of each channel can be collected, TRUE is the effective signal output, and FALSE is the no effective signal output.

	i	名称	地址	显示格式	监视值	修改值		注释
1			%Q1.0	布尔型	☒ TRUE	TRUE	☒ 	DO Ch1
2			%Q1.1	布尔型	☐ FALSE		☐	DO Ch2
3			%Q1.2	布尔型	☐ FALSE		☐	DO Ch3
4			%Q1.3	布尔型	☐ FALSE		☐	DO Ch4
5			%Q1.4	布尔型	☐ FALSE		☐	DO Ch5
6			%Q1.5	布尔型	☐ FALSE		☐	DO Ch6
7			%Q1.6	布尔型	☐ FALSE		☐	DO Ch7
8			%Q1.7	布尔型	☐ FALSE		☐	DO Ch8
9			%Q2.0	布尔型	☐ FALSE		☐	DO Ch9
10			%Q2.1	布尔型	☐ FALSE		☐	DO Ch10
11			%Q2.2	布尔型	☐ FALSE		☐	DO Ch11
12			%Q2.3	布尔型	☐ FALSE		☐	DO Ch12
13			%Q2.4	布尔型	☐ FALSE		☐	DO Ch13
14			%Q2.5	布尔型	☐ FALSE		☐	DO Ch14
15			%Q2.6	布尔型	☐ FALSE		☐	DO Ch15
16			%Q2.7	布尔型	☐ FALSE		☐	DO Ch16

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

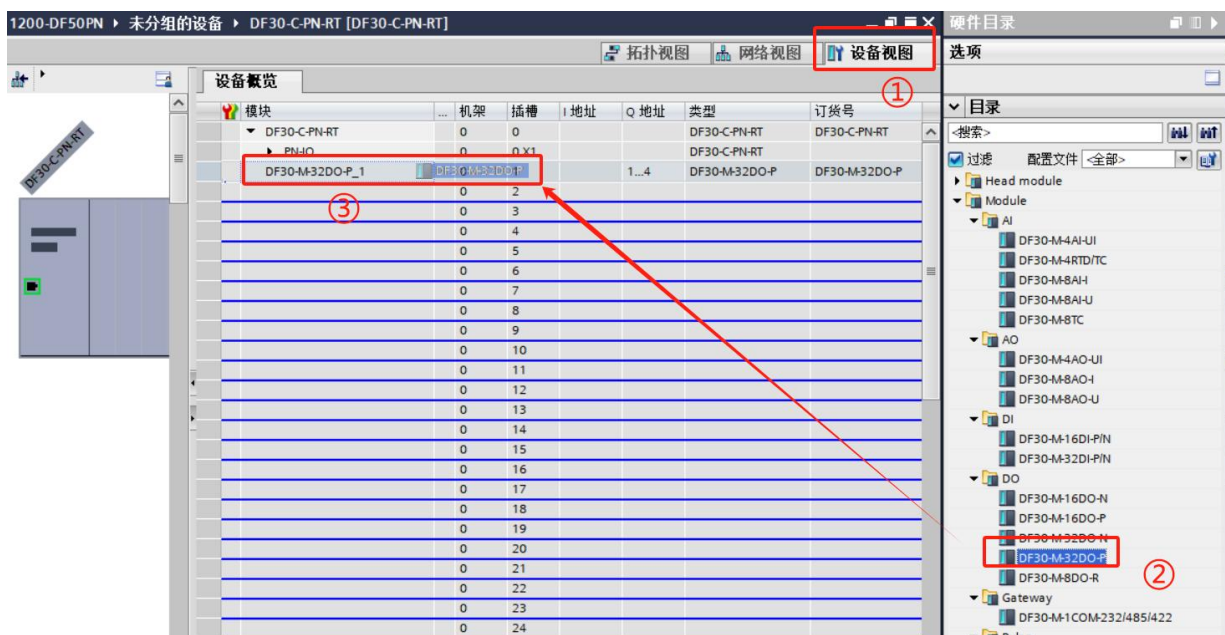
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable

	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.6 DF30-M-32DO-P

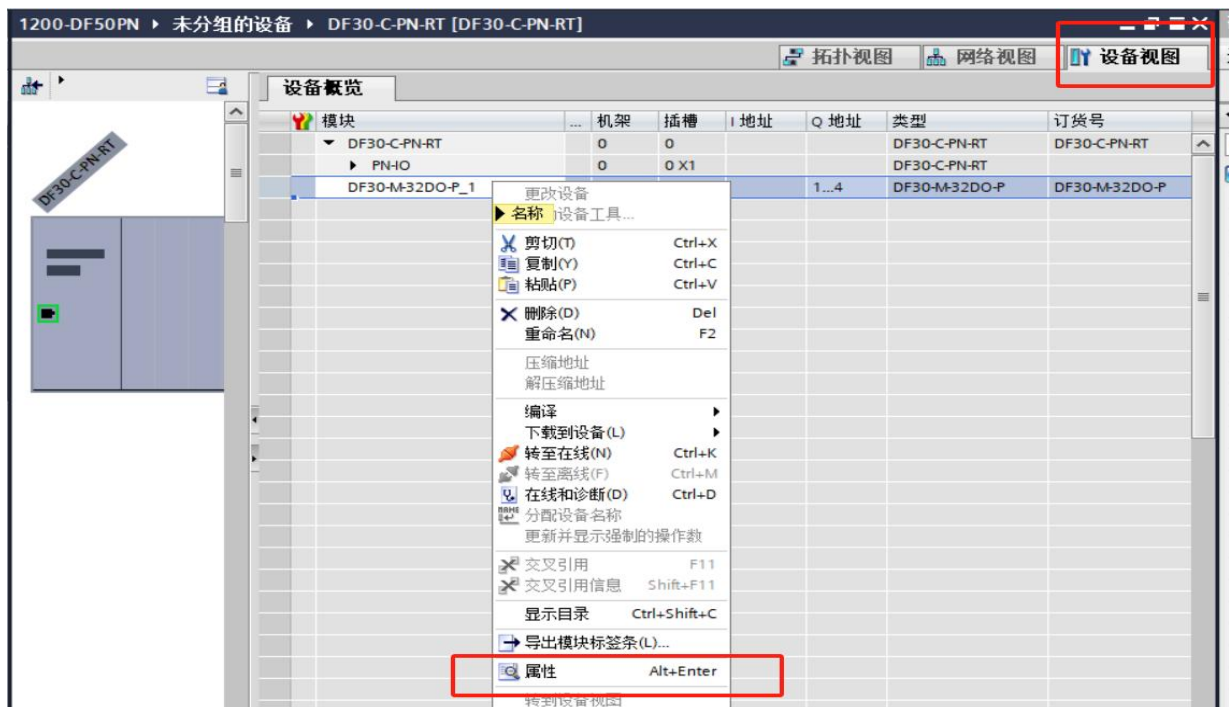
1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-32DO-P in the hardware directory
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-32DO-P module and right-click to select the Properties option



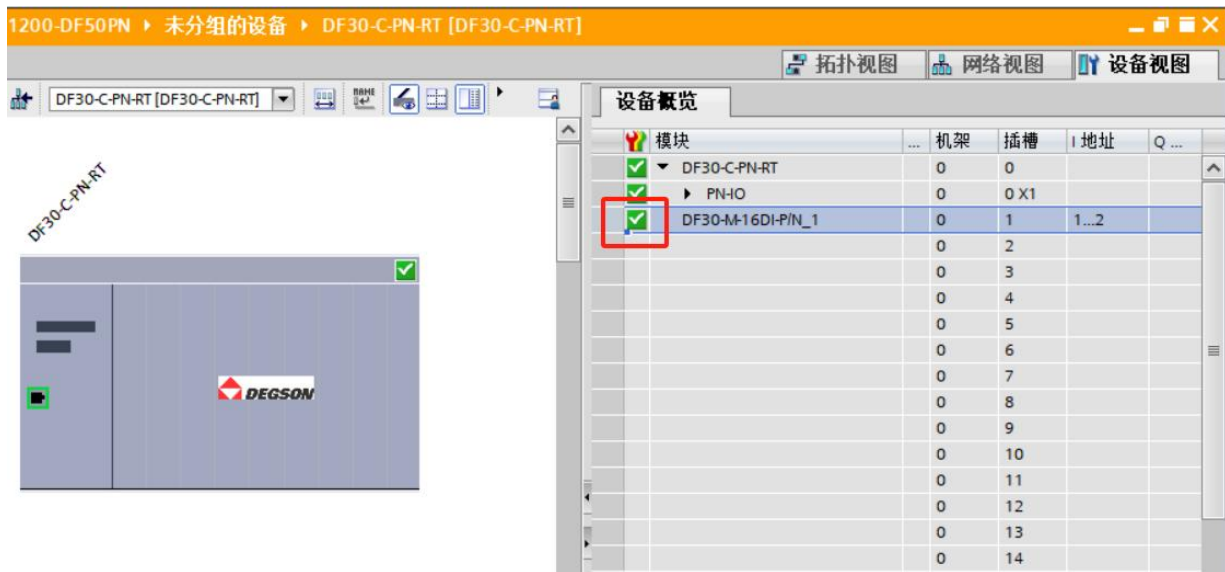
3 Data monitoring

According to the data address of the module, the DO output status of each channel can be collected, TRUE is the effective signal output, and FALSE is the no effective signal output.

	名称	地址	显示格式	监视值	修改值		注释
1		%Q1.0	布尔型	☒ TRUE	TRUE	☒ !	DO Ch1
2		%Q1.1	布尔型	☐ FALSE		☐	DO Ch2
3		%Q1.2	布尔型	☐ FALSE		☐	DO Ch3
4		%Q1.3	布尔型	☐ FALSE		☐	DO Ch4
5		%Q1.4	布尔型	☐ FALSE		☐	DO Ch5
6		%Q1.5	布尔型	☐ FALSE		☐	DO Ch6
7		%Q1.6	布尔型	☐ FALSE		☐	DO Ch7
8		%Q1.7	布尔型	☐ FALSE		☐	DO Ch8
9		%Q2.0	布尔型	☐ FALSE		☐	DO Ch9
10		%Q2.1	布尔型	☐ FALSE		☐	DO Ch10
11		%Q2.2	布尔型	☐ FALSE		☐	DO Ch11
12		%Q2.3	布尔型	☐ FALSE		☐	DO Ch12
13		%Q2.4	布尔型	☐ FALSE		☐	DO Ch13
14		%Q2.5	布尔型	☐ FALSE		☐	DO Ch14
15		%Q2.6	布尔型	☐ FALSE		☐	DO Ch15
16		%Q2.7	布尔型	☐ FALSE		☐	DO Ch16

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

Fault	Fault name	Workaround/Cause
-------	------------	------------------

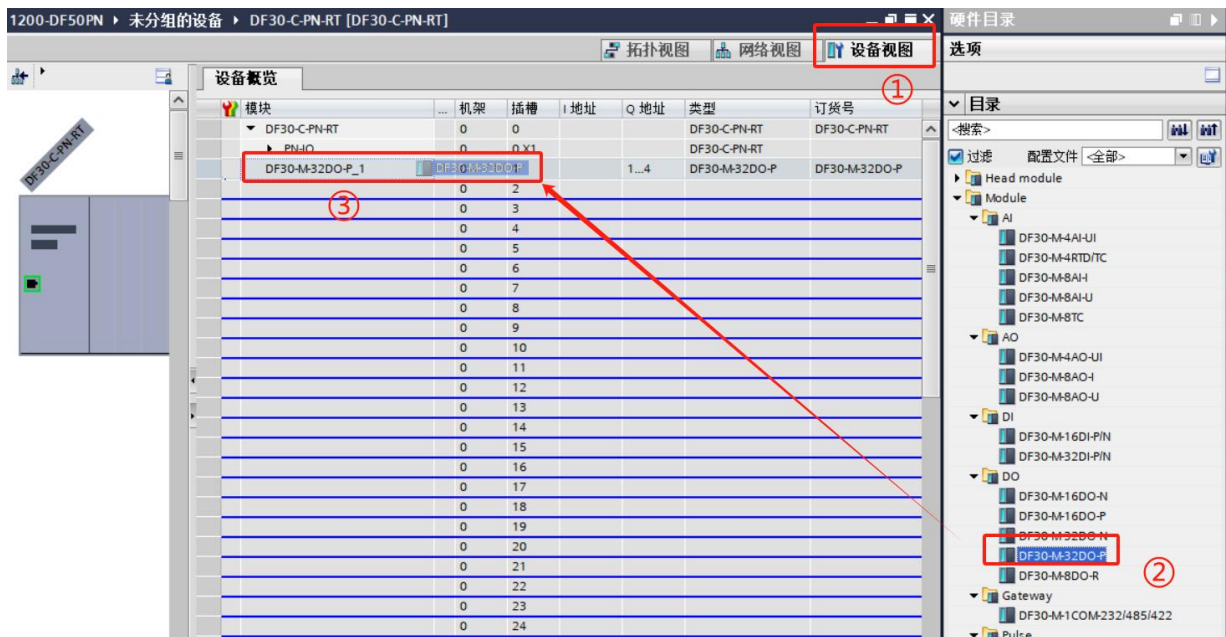
location		
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module

		channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.7 DF30-M-32DO-N

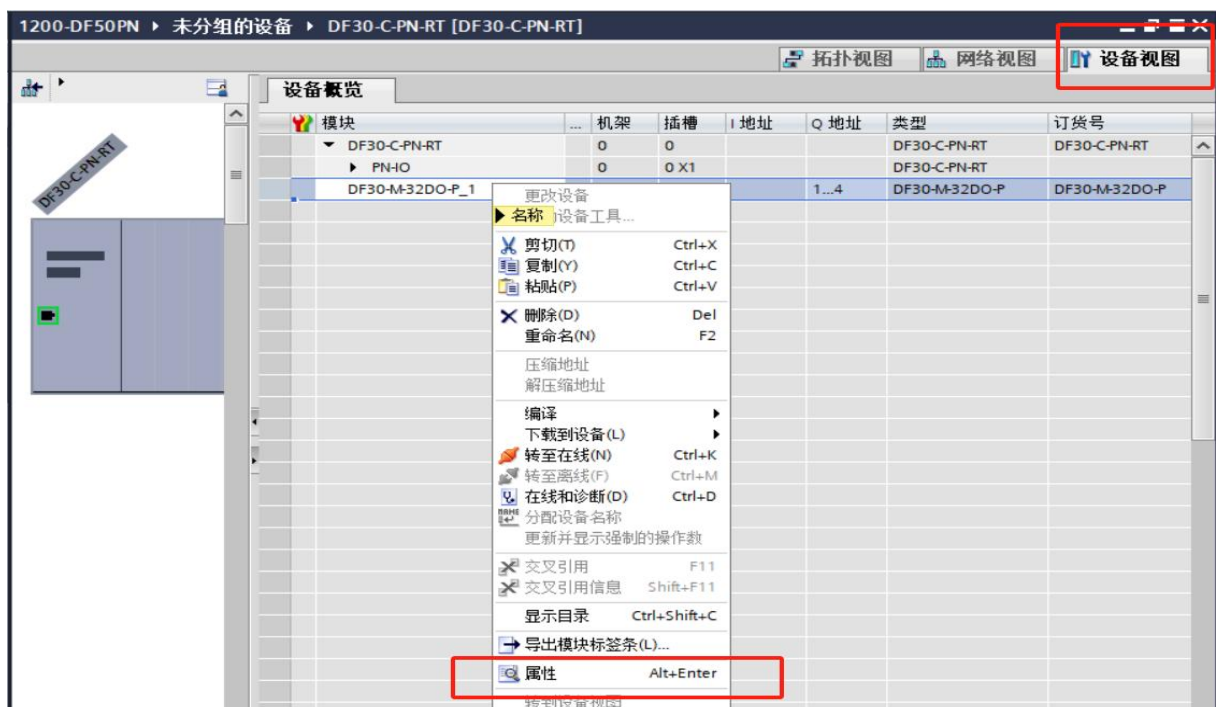
1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-32DO-N in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-32DO-N module and right-click to select the Properties option



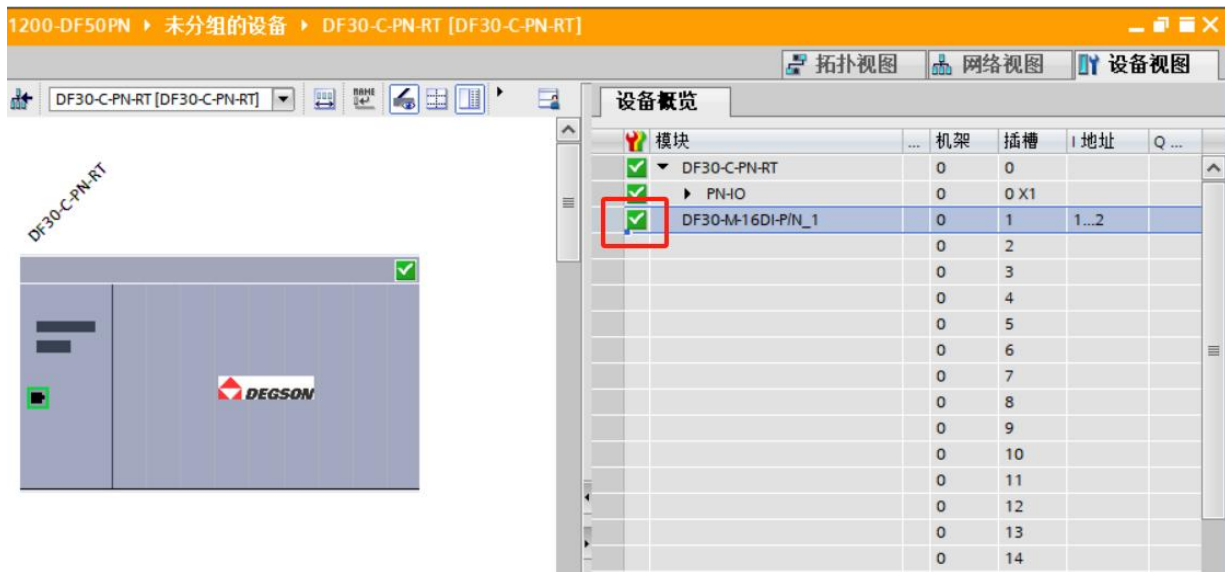
3 Data monitoring

According to the data address of the module, the DO output status of each channel can be collected, TRUE is the effective signal output, and FALSE is the no effective signal output.

	i	名称	地址	显示格式	监视值	修改值		注释
1			%Q1.0	布尔型	☒ TRUE	TRUE	☒	DO Ch1
2			%Q1.1	布尔型	☐ FALSE		☐	DO Ch2
3			%Q1.2	布尔型	☐ FALSE		☐	DO Ch3
4			%Q1.3	布尔型	☐ FALSE		☐	DO Ch4
5			%Q1.4	布尔型	☐ FALSE		☐	DO Ch5
6			%Q1.5	布尔型	☐ FALSE		☐	DO Ch6
7			%Q1.6	布尔型	☐ FALSE		☐	DO Ch7
8			%Q1.7	布尔型	☐ FALSE		☐	DO Ch8
9			%Q2.0	布尔型	☐ FALSE		☐	DO Ch9
10			%Q2.1	布尔型	☐ FALSE		☐	DO Ch10
11			%Q2.2	布尔型	☐ FALSE		☐	DO Ch11
12			%Q2.3	布尔型	☐ FALSE		☐	DO Ch12
13			%Q2.4	布尔型	☐ FALSE		☐	DO Ch13
14			%Q2.5	布尔型	☐ FALSE		☐	DO Ch14
15			%Q2.6	布尔型	☐ FALSE		☐	DO Ch15
16			%Q2.7	布尔型	☐ FALSE		☐	DO Ch16

4 Firmware version query

After the configuration is successful, double-click the red area in the diagram to view the module firmware version



5 Module incorrect display

When certain errors occur with the coupler or the module that the coupler is inserted into, the error will be prompted in the diagnostic status of Botu:



The following table lists all possible errors:

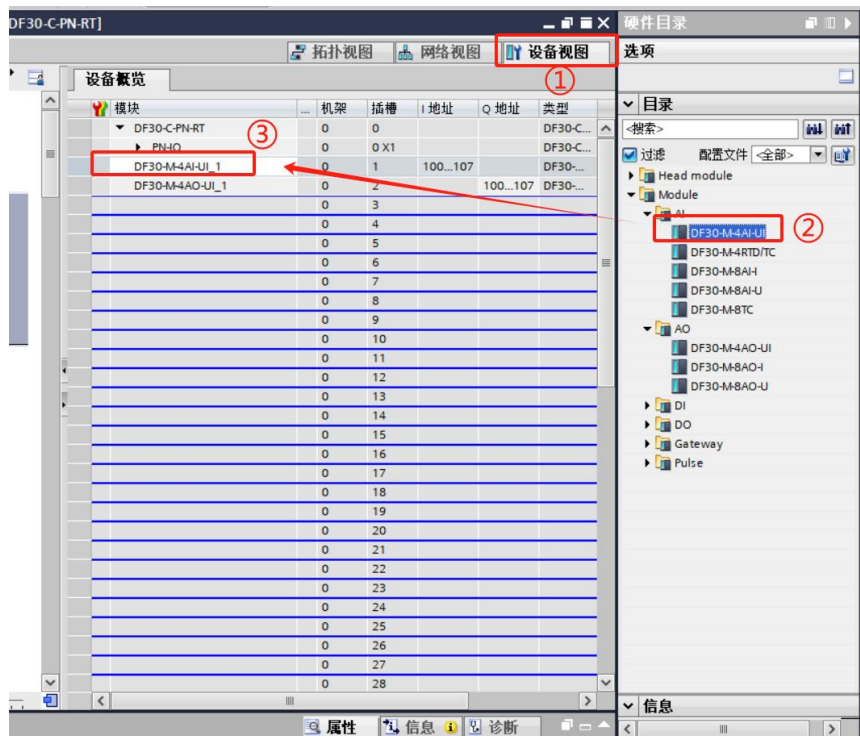
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module

	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.8 DF30-M-4AI-UI

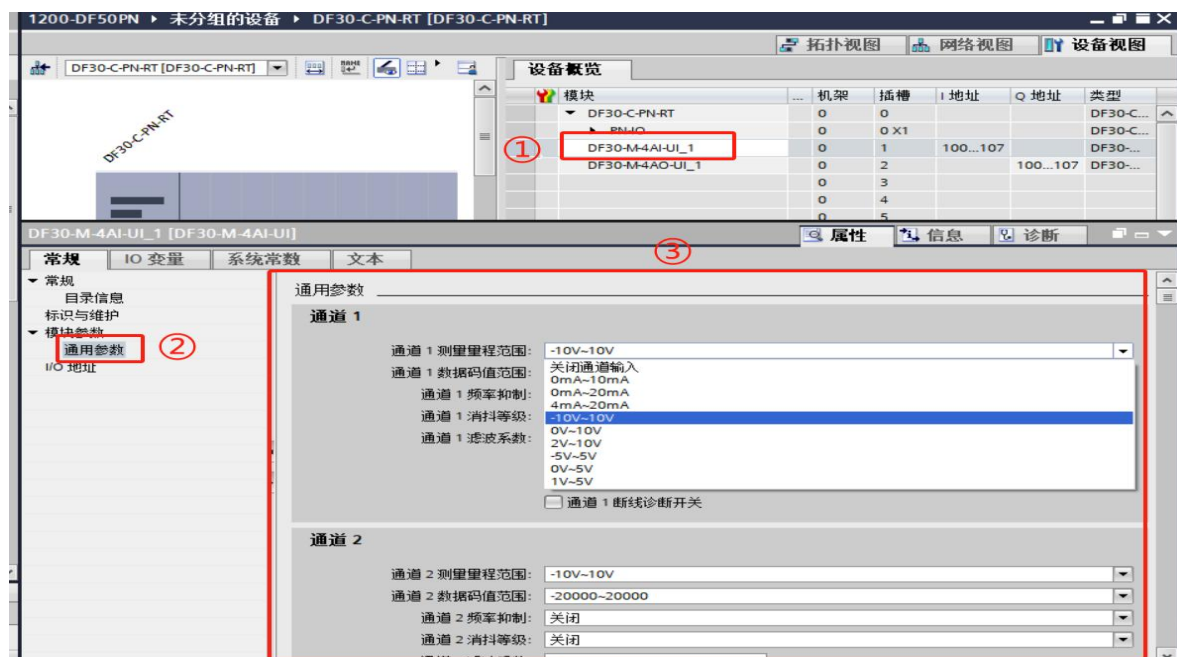
1 Add a module

- ①Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ②Select DF30-M-4AI-UI in the hardware directory
- ③Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-4AI-UI module and right-click to select the Properties option



The configurable parameters are shown in the table below:

Name	Meaning	Configure items
Measurement range	Close the input	Disable
	Current measurement range	0mA~10mA

		0mA~20mA
		4mA~20mA
	Voltage measurement range	-10V~10V
		0V~10V
		2V~10V
		-5V~5V
		0V~5V
		1V~5V
Data format	data format	-20000~20000
		-27648~27648
		-32000~32000
Frequency suppression	Frequency suppression	Disable
		50Hz/60Hz
Jitter elimination level	Anti-shake level	Disable
		Weak
		Medium
		Strong
Filter	Filter factor	0~255
Overlimit Diag	Over-limit diagnosis	Enable/Disable
Overflow Diag	Spillover diagnosis	Enable/Disable
Breaking Diag	Diagnosis of broken wires	Enable/Disable

3 Data monitoring

1200-DF50PN ▶ PLC_1 [CPU 1212C DC/DC] ▶ PLC 变量 ▶ DF30-M4AI-UI [4]

变量 用户常量

DF30-M4AI-UI

	名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1	IW100	Word	%IW100	☐	☒	☒	☒	16#0000	
2	IW102	Word	%IW102	☐	☒	☒	☒	16#0000	
3	IW104	Word	%IW104	☐	☒	☒	☒	16#0000	
4	IW106	Word	%IW106	☐	☒	☒	☒	16#0000	
5	<新增>			☐	☒	☒	☒		

Input data: 8Byte		
ByteNo.	WordNo.	Meaning
Byte0-Byte1	Word0	Channel 1 enters the data
Byte2-Byte3	Word1	Channel 2 enters the data
Byte4-Byte5	Word2	Channel 3 enters the data
Byte6-Byte7	Word3	Channel 4 enters the data

4 Firmware version query

设备概览

模块	机架	插槽	I 地址	Q 地址	类型
DF30-C-PN-RT	0	0			DF30-C...
PN-IO	0	0 X1			DF30-C...
DF30-M4AI-UI_1	0	1	100...107		DF30-...
DF30-M4AO-UI_1	0	2		100...107	DF30-...
	0	3			
	0	4			
	0	5			
	0	6			

Double click



5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in

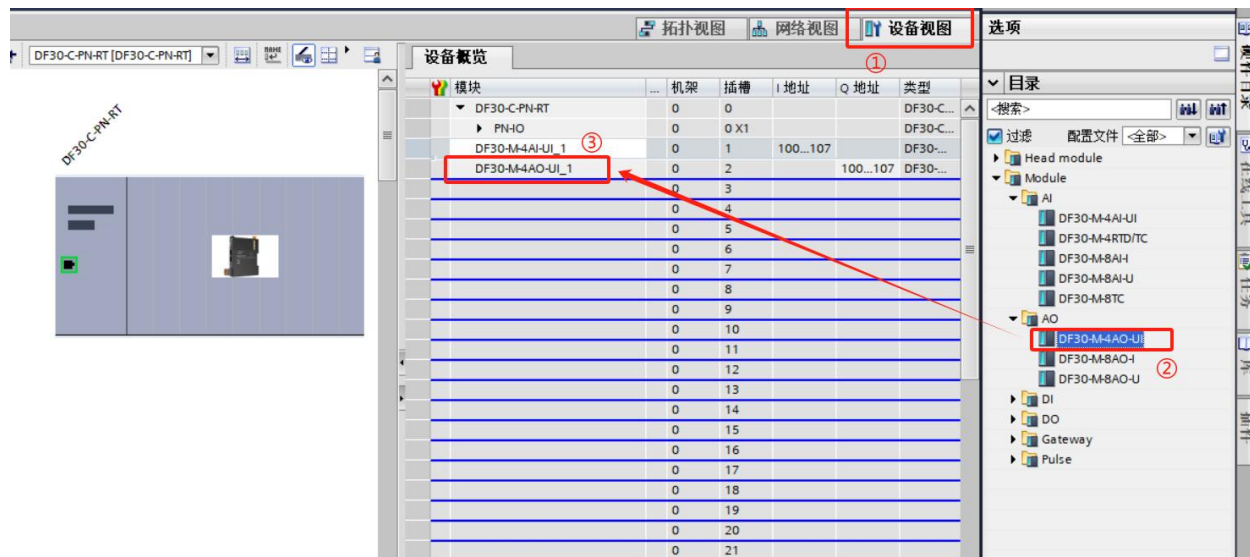
		place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal

		of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.9 DF30-M-4AO-UI

1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-4AO-UI in the hardware directory
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-4AO-UI module and right-click to select the Properties option



name	meaning	Configure items
Measurement range	Output range	Disable
		0mA~10mA
		0mA~20mA
		4mA~20mA
		-10V~10V
		0V~10V
		2V~10V
		-5V~5V
		0V~5V
		1V~5V
Data format	data format	-20000~20000
		-27648~27648
		-32000~32000
Output behaviour OnFieldbus	Output mode when fieldbus	Output hold
Error	error	Output preset values
Substitute Value	Output preset values	-32768~32767
Open Circuit Diag	Open Circuit Diagnosis	Enable/Disable

3 Data monitoring

1200-DF50PN ▶ PLC_1 [CPU 1212C DC/DC/DC] ▶ PLC 变量 ▶ DF30-M4AO-UI [4]

变量 用户常量

DF30-M4AO-UI

	名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1	QW100	Word	%QW100	☐	☒	☒	☒	16#4E20	
2	QW102	Word	%QW102	☐	☒	☒	☒	16#0000	
3	QW104	Word	%QW104	☐	☒	☒	☒	16#0000	
4	QW106	Word	%QW106	☐	☒	☒	☒	16#0000	
5	<新增>			☐	☒	☒	☒		

Output data:16Byte		
ByteNo.	WordNo.	meaning
Byte0-Byte1	Word0	Channel 1 outputs data
Byte2-Byte3	Word1	Channel 2 outputs data
Byte4-Byte5	Word2	Channel 3 outputs data
Byte6-Byte7	Word3	Channel 4 outputs data

4 Firmware version query

DF30-C-PN-RT [DF30-C-PN-RT]

设备概览

模块	机架	插槽	I 地址	Q 地址	类型
DF30-C-PN-RT	0	0			DF30-C...
PN-IO	0	0 X1			DF30-C...
DF30-M4AI-UI_1	0	1	100...107		DF30-...
DF30-M4AO-UI_1	0	2		100...107	DF30-...
	0	3			
	0	4			

Double click

1200-DF50PN ▶ 未分组的设备 ▶ DF30-C-PN-RT [DF30-C-PN-RT] ▶ DF30-M4AO-UI_1

诊断

常规

模块

短名称: DF30-M4AO-UI

订货号: DF30-M4AO-UI

硬件: 0

固件: V 2.0.4

固件扩展: ---

5 Module incorrect display



The following table lists all possible errors:

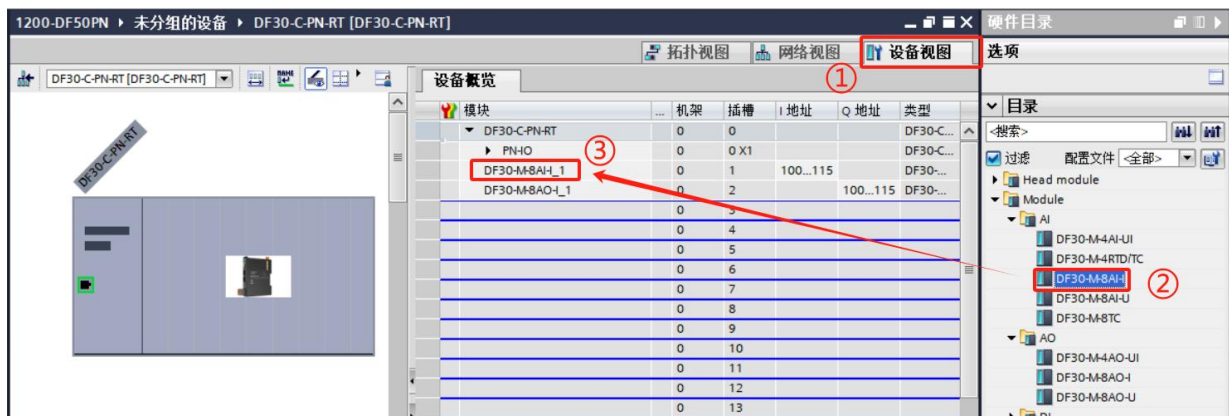
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration

		parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.10 DF30-M-8AI-I

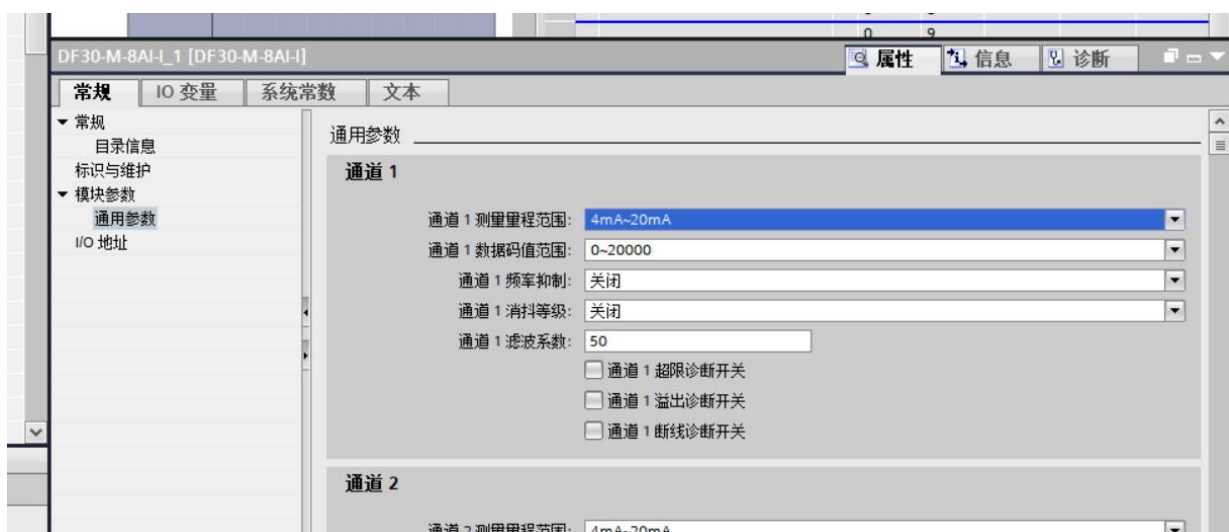
1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-4AO-UI in the hardware directory
- ③ Double-click to join the device overview



2 Parameter configuration

Select the DF30-M-8AI-I module and right-click to select the Properties option



The configurable parameters are shown in the table below:

name	meaning	Configure items
Measurement range	Measurement range	Disable
		0mA~10mA
		0mA~20mA
		4mA~20mA
Data format	data format	0~20000
		0~27648
		0~32000
Frequency suppression	Frequency suppression	Disable
		50Hz/60Hz
Jitter elimination level	Anti-shake level	Disable
		Weak
		Medium
		Strong
Filter	Filter factor	0~255
Overlimit Diag	Over-limit diagnosis	Enable/Disable
Overflow Diag	Spillover diagnosis	Enable/Disable
Breaking Diag	Diagnosis of broken wires	Enable/Disable

3 Data monitoring

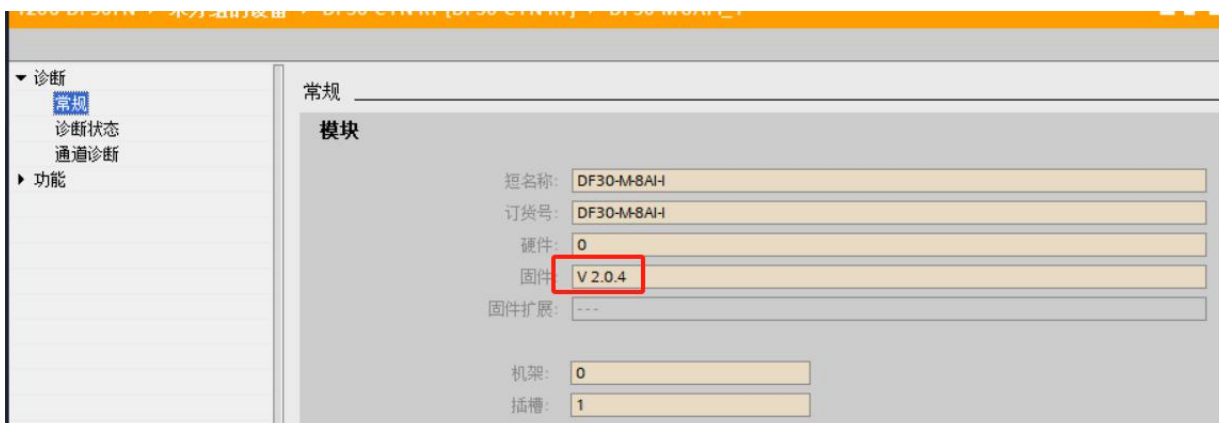
1200-DF50PN ▶ PLC_1 [CPU 1212C DC/DC/DC] ▶ PLC 变量 ▶ DF30-M8AIH [8]									
DF30-M8AIH									
	名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1	IW100	Word	%IW100	☐	☒	☒	☒	16#4E20	
2	IW102	Word	%IW102	☐	☒	☒	☒	16#8000	
3	IW104	Word	%IW104	☐	☒	☒	☒	16#8000	
4	IW106	Word	%IW106	☐	☒	☒	☒	16#8000	
5	IW108	Word	%IW108	☐	☒	☒	☒	16#8000	
6	IW110	Word	%IW110	☐	☒	☒	☒	16#8000	
7	IW112	Word	%IW112	☐	☒	☒	☒	16#8000	
8	IW114	Word	%IW114	☐	☒	☒	☒	16#8000	
9	<新增>			☐	☒	☒	☒		

➤ Enter data

Input data: 16Byte		
ByteNo.	WordNo.	meaning

Byte0-Byte1	Word0	Channel 1 enters the data
Byte2-Byte3	Word1	Channel 2 enters the data
Byte4-Byte5	Word2	Channel 3 enters the data
Byte6-Byte7	Word3	Channel 4 enters the data
Byte8-Byte9	Word4	Channel 5 enters the data
Byte10-Byte11	Word5	Channel 6 enters the data
Byte12-Byte13	Word6	Channel 7 enters the data
Byte14-Byte15	Word7	Channel 8 enters the data

4 Firmware version query



5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable

	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

5.11 DF30-M-8AO-I

1 Add a module

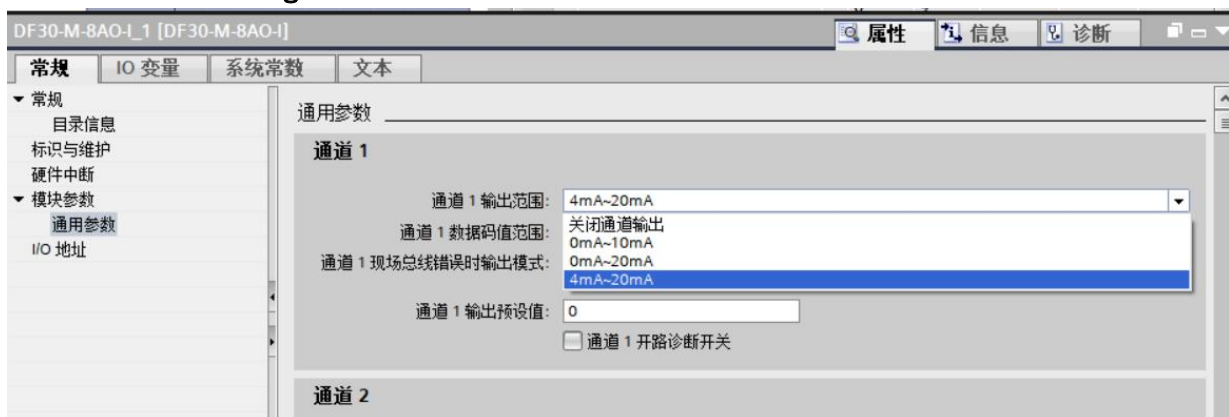
① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts

② Select DF30-M-8AO-I in the hardware catalog

③ Double-click to join the device overview



2 Parameter configuration



The configurable parameters are shown in the table below:

Name	Meaning	Configure items
Measurement range	Output range	Disable
		0mA~10mA
		0mA~20mA
		4mA~20mA
Data format	data format	0~20000
		0~27648
		0~32000

Output behaviour OnFieldbus	Output mode when fieldbus	Output preset values
Error	error	Output hold
Substitute Value	Output preset values	-32768~32767
Open Circuit Diag	Open Circuit Diagnosis	Enable/Disable

3 Data monitoring

1200-DF50PN ▶ PLC_1 [CPU 1212C DC/DC/DC] ▶ PLC 变量 ▶ DF30-M8AO-I [8]

变量 用户常量

DF30-M8AO-I

名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1 QW100	Word	%QW100	☐	☒	☒	☒	16#4E20	
2 QW102	Word	%QW102	☐	☒	☒	☒	16#0000	
3 QW104	Word	%QW104	☐	☒	☒	☒	16#0000	
4 QW106	Word	%QW106	☐	☒	☒	☒	16#0000	
5 QW108	Word	%QW108	☐	☒	☒	☒	16#0000	
6 QW110	Word	%QW110	☐	☒	☒	☒	16#0000	
7 QW112	Word	%QW112	☐	☒	☒	☒	16#0000	
8 QW114	Word	%QW114	☐	☒	☒	☒	16#0000	
<新增>			☐	☒	☒	☒		

Output data: 16Byte

ByteNo.	WordNo.	Meaning
Byte0-Byte1	Word0	Channel 1 outputs data
Byte2-Byte3	Word1	Channel 2 outputs data
Byte4-Byte5	Word2	Channel 3 outputs data
Byte6-Byte7	Word3	Channel 4 outputs data
Byte8-Byte9	Word4	Channel 5 outputs data
Byte10-Byte11	Word5	Channel 6 outputs data
Byte12-Byte13	Word6	Channel 7 outputs data
Byte14-Byte15	Word7	Channel 8 outputs data

4 Firmware version query

1200-DF50PN ▶ 未分组的设备 ▶ DF30-C-PN-RT [DF30-C-PN-RT]

拓扑视图 网络视图 设备视图

设备概览

模块	机架	插槽	I 地址	Q 地址	类型
DF30-C-PN-RT	0	0			DF30-C...
PN-IO	0	0 X1			DF30-C...
DF30-M8AI-1	0	1	100...115		DF30-...
DF30-M8AO-1	0	2		100...115	DF30-...
	0	3			
	0	4			
	0	5			
	0	6			
	0	7			
	0	8			

Double click



5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model

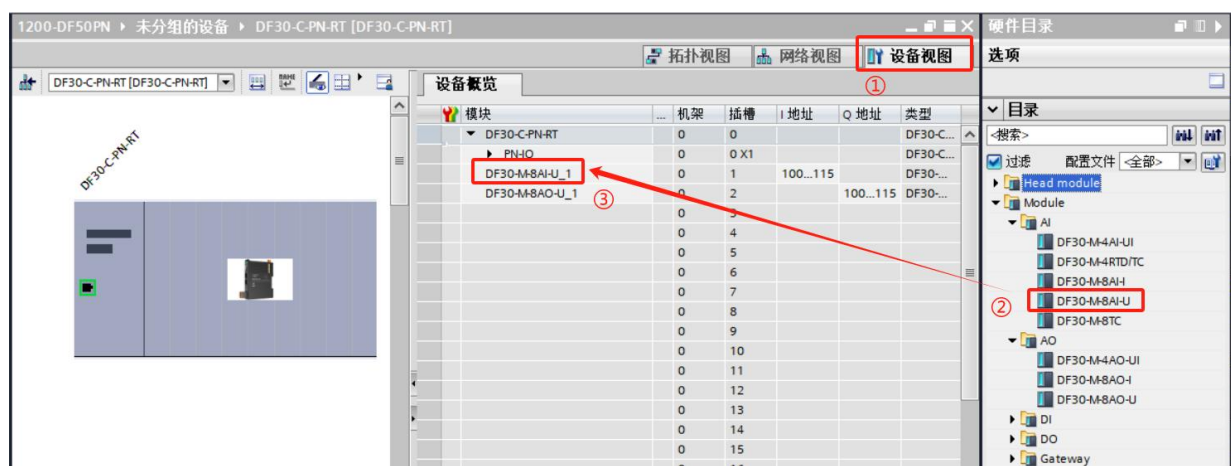
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal

	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

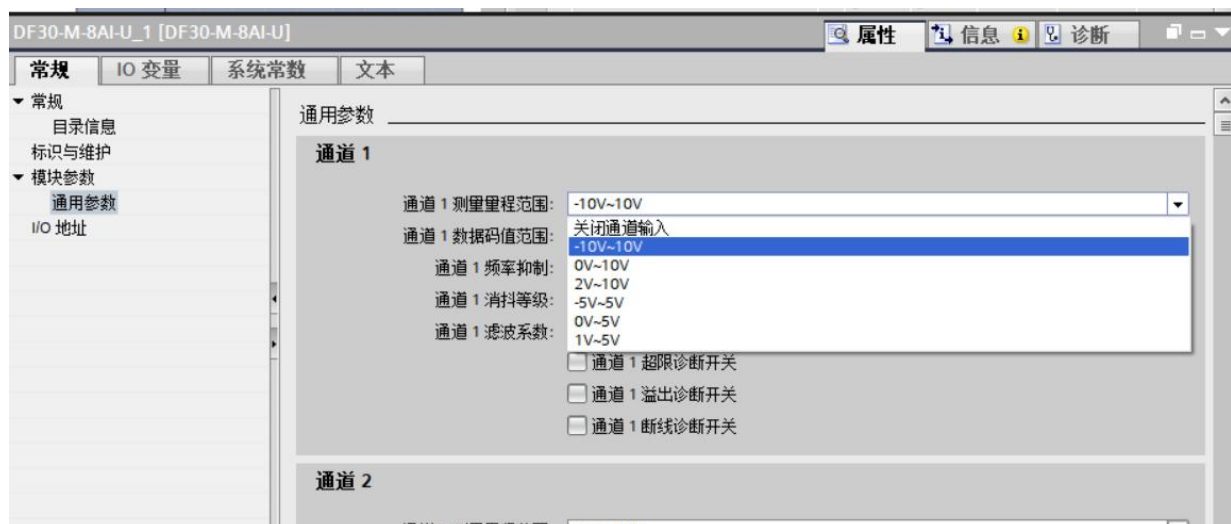
5.12 DF30-M-8AI-U

1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-8AI-U in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration



3 Data monitoring

Name	Meaning	Configure items
Measurement range	Measurement range	Disable
		-10V~10V
		0V~10V
		2V~10V
		-5V~5V
		0V~5V
		1V~5V
Data format	data format	-20000~20000
		-27648~27648
		-32000~32000
Frequency suppression	Frequency suppression	Disable
		50Hz/60Hz
Jitter elimination level	Anti-shake level	Disable
		Weak
		Medium
		Strong
Filter	Filter factor	0~255
Overlimit Diag	Over-limit diagnosis	Enable/Disable
Overflow Diag	Spillover diagnosis	Enable/Disable
Breaking Diag	Diagnosis of broken wires	Enable/Disable

DF30-M8AI-U									
	名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1	 IW100	Word	%IW100	☐	☒	☒	☒	16#4E21	
2	 IW102	Word	%IW102	☐	☒	☒	☒	16#0000	
3	 IW104	Word	%IW104	☐	☒	☒	☒	16#0000	
4	 IW106	Word	%IW106	☐	☒	☒	☒	16#0000	
5	 IW108	Word	%IW108	☐	☒	☒	☒	16#0000	
6	 IW110	Word	%IW110	☐	☒	☒	☒	16#0000	
7	 IW112	Word	%IW112	☐	☒	☒	☒	16#0000	
8	 IW114	Word	%IW114	☐	☒	☒	☒	16#0000	
9	<新增>			☐	☒	☒	☒		

Input data: 16Byte		
ByteNo.	WordNo.	Meaning

Byte0-Byte1	Word0	Channel 1 enters the data
Byte2-Byte3	Word1	Channel 2 enters the data
Byte4-Byte5	Word2	Channel 3 enters the data
Byte6-Byte7	Word3	Channel 4 enters the data
Byte8-Byte9	Word4	Channel 5 enters the data
Byte10-Byte11	Word5	Channel 6 enters the data
Byte12-Byte13	Word6	Channel 7 enters the data
Byte14-Byte15	Word7	Channel 8 enters the data

4 Firmware version query



5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does	Check whether the configuration module

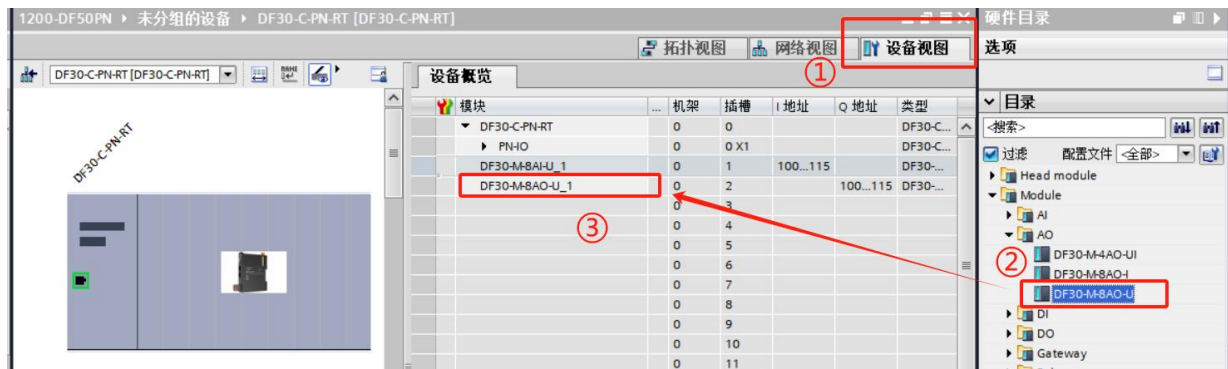
	not match the card that is actually scanned	model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal

		of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

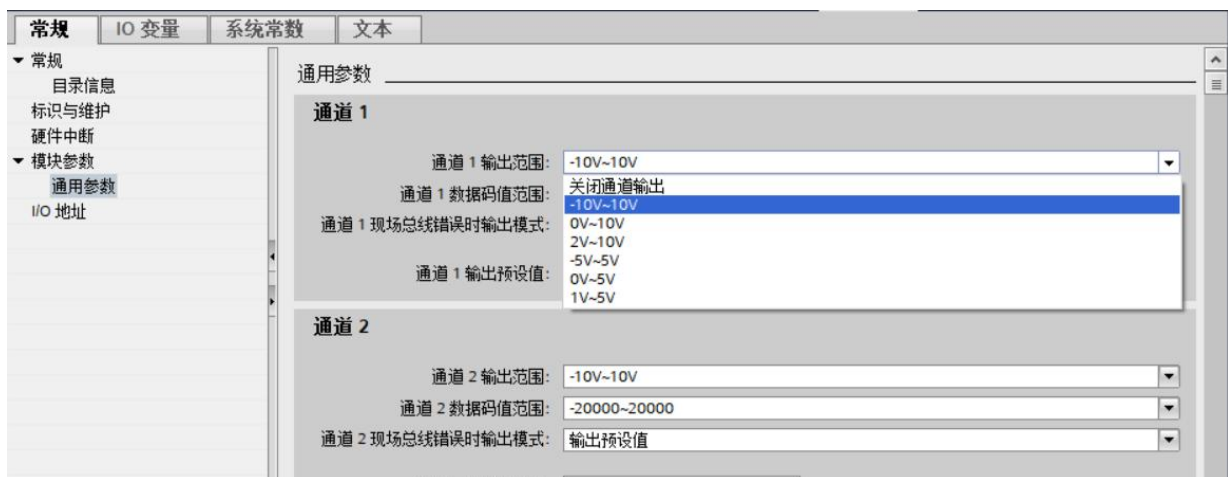
5.13 DF30-M-8A0-U

1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-4A0-UI in the hardware directory
- ③ Double-click to join the device overview



2 Parameter configuration



Name	Meaning	Configure items
Measurement range	Output range	Disable
		-10V~10V
		0V~10V
		2V~10V
		-5V~5V
		0V~5V
		1V~5V
Data format	data format	-20000~20000
		-27648~27648
		-32000~32000
Output behaviour OnFieldbus	Output mode when fieldbus	Output hold
Error	error	Output preset values
Substitute Value	Output preset values	-32768~32767

3 Data monitoring

1200-DF50PN ▶ PLC_1 [CPU 1212C DC/DC/DC] ▶ PLC 变量 ▶ DF30-M8AO-U [8]

变量 用户常量

DF30-M8AO-U

名称	数据类型	地址	保持	从 H...	从 H...	在 H...	监视值	注释
1 QW100	Word	%QW100	☐	☒	☒	☒	16#4E20	
2 QW102	Word	%QW102	☐	☒	☒	☒	16#0000	
3 QW104	Word	%QW104	☐	☒	☒	☒	16#0000	
4 QW106	Word	%QW106	☐	☒	☒	☒	16#0000	
5 QW108	Word	%QW108	☐	☒	☒	☒	16#0000	
6 QW110	Word	%QW110	☐	☒	☒	☒	16#0000	
7 QW112	Word	%QW112	☐	☒	☒	☒	16#0000	
8 QW114	Word	%QW114	☐	☒	☒	☒	16#0000	
9 <新增>			☐	☒	☒	☒		

Output data: 16Byte

ByteNo.	WordNo.	Meaning
Byte0-Byte1	Word0	Channel 1 outputs data
Byte2-Byte3	Word1	Channel 2 outputs data
Byte4-Byte5	Word2	Channel 3 outputs data
Byte6-Byte7	Word3	Channel 4 outputs data
Byte8-Byte9	Word4	Channel 5 outputs data
Byte10-Byte11	Word5	Channel 6 outputs data
Byte12-Byte13	Word6	Channel 7 outputs data
Byte14-Byte15	Word7	Channel 8 outputs data

4 Firmware version query

1200-DF50PN ▶ 未分组的设备 ▶ DF30-C-PN-RT [DF30-C-PN-RT] ▶ DF30-M8AO-U_1

诊断 常规 诊断状态 通道诊断 功能

常规

模块

短名称: DF30-M8AO-U

订货号: DF30-M8AO-U

固件: 0

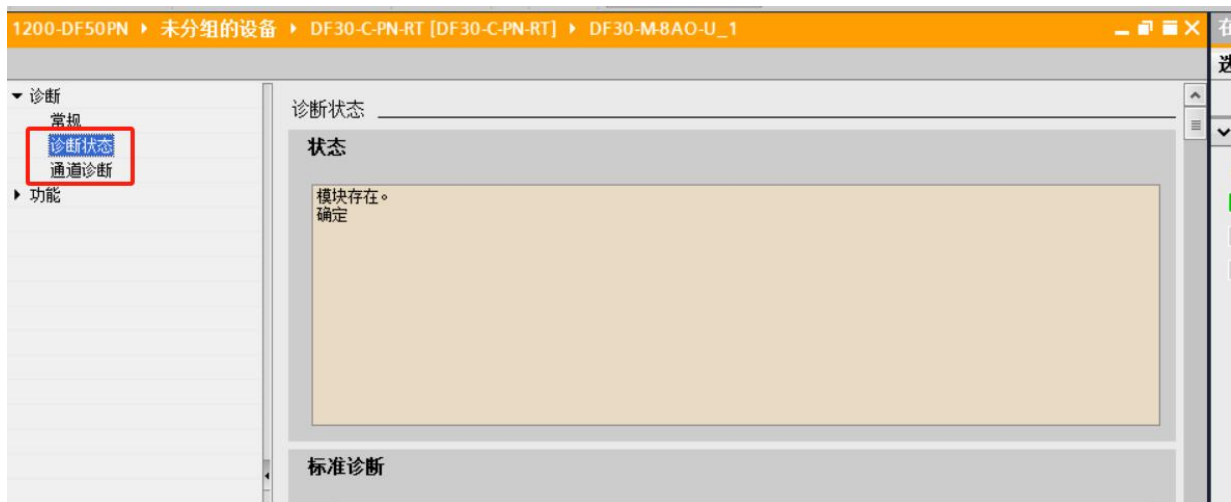
固件: V 2.0.4

固件扩展: ---

机架: 0

插槽: 2

5 Module incorrect display



The following table lists all possible errors:

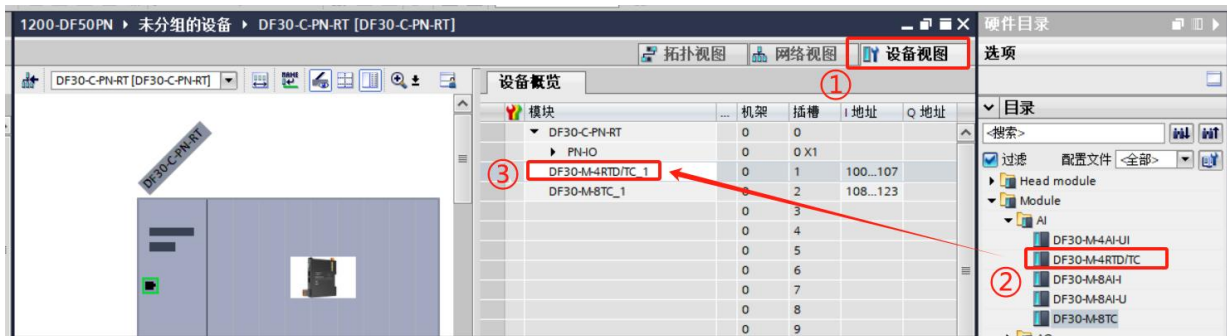
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to

		resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

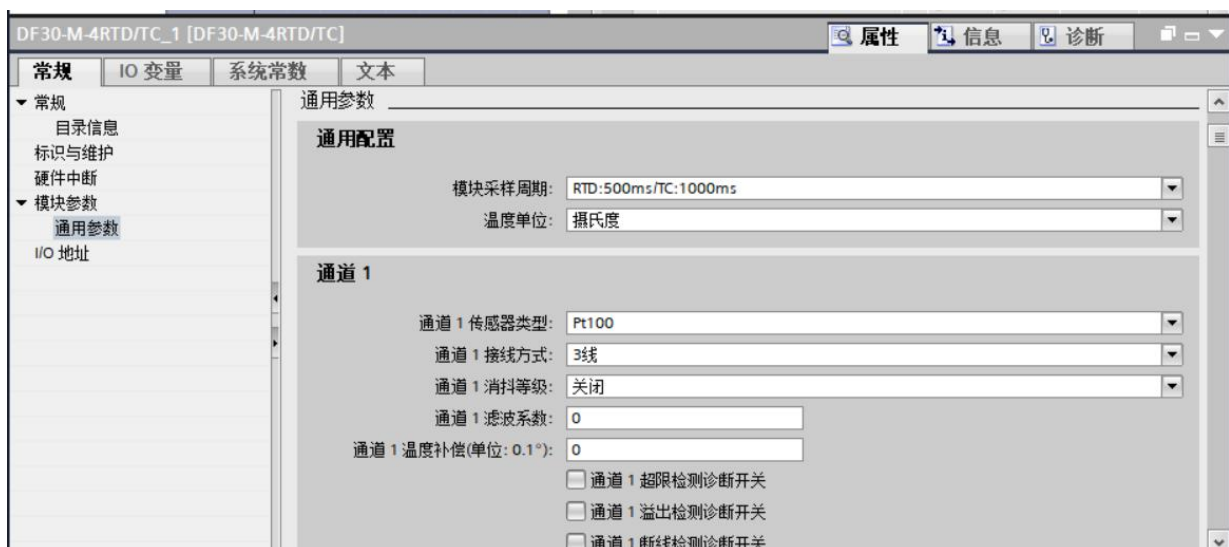
5.14 DF30-M-4RTD/TC

1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-4RTD/TC in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration



Universal configuration

Name	Meaning	Configure items	illustrate
------	---------	-----------------	------------

Sampling Time	sampling Time	RTD:250ms/TC:500ms	/
		RTD:500ms/TC:1000ms	/
		RTD:1000ms/TC:2000ms	/
		RTD:320ms/TC:640ms (50hz Fre suppre)	Turn on 50Hz frequency suppression
		RTD:266ms/TC:532ms (60hz Fre suppre)	Turn on 60Hz frequency suppression
Temperature unit	temperature unit	Degree Celsius	celsius
		Degree Fahrenheit	Fahrenheit
		Kelvin	Kai's degree

Channel configuration

Name	Configure items
Sensor type	Disable
	PT series: PT100~PT1000
	Ni series: Ni100~Ni1000
	Cu series: Cu10~Cu100
	KTY83 series: 110~151
	KTY84 series: 130~151
	resistance: 40Ω~2KΩ
	thermocouple: K/E/T/J/B/S/R/N/C/L
	voltage signal: ±15.625mV~±2000mV
RTD Connection type (TC sensor, this configuration is not valid)	2-line
	3- Line
	4- Line
Shake level	Shut down
	weak
	middle
	strong

Filter factor	0~255
Temperature compensation	-32768~32767 (Index value 0.1° C)
Over-limit diagnosis	Enable/Disable
Spillover diagnosis	Enable/Disable
Diagnosis of broken wires	Enable/Disable

3 Data monitoring

As shown in the figure below, the input signal of each channel can be monitored, the first channel receives signal 194, which means 19.4 degrees Celsius, and the other channels show -32768 to indicate disconnection.

		名称	地址	显示格式	监视值	修改值		注释
1			%IW68	带符号十进制	194		☐	AI CH1
2			%IW70	带符号十进制	-32768		☐	AI CH2
3			%IW72	带符号十进制	-32768		☐	AI CH3
4			%IW74	带符号十进制	-32768		☐	AI CH4

4 Firmware version query

诊断

常规

诊断状态

通道诊断

功能

常规

模块

短名称:

DF30-M-4RTD/TC

订货号:

DF30-M-4RTD/TC

硬件:

0

固件:

V 2.0.3

固件扩展:

机架:

0

插槽:

1

模块信息

5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable

	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

6 The correspondence between code value and temperature

PT100 type			
Temperature (Celsius)	decimal	hexadecimal	Code value illustrate
>850	32767	0x7FFF	Channel data overflow
-200 ~ 850	-2000 ~ 8500	0xF830 ~ 0x2134	Normal range
<-200	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear
PT200 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>850	32767	0x7FFF	Channel data overflow
-200 ~ 850	-2000 ~ 8500	0xF830 ~ 0x2134	Normal range
<-200	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does

PT200 type			
			not match the actual sensor gear

PT500 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>850	32767	0x7FFF	Channel data overflow
-200 ~ 850	-2000 ~ 8500	0xF830 ~ 0x2134	Normal range
<-200	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

PT1000 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>850	32767	0x7FFF	Channel data overflow
-200 ~ 850	-2000 ~ 8500	0xF830 ~ 0x2134	Normal range
<-200	-32767	0x8001	Channel data overflows

PT1000 type			
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Ni100 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>250	32767	0x7FFF	Channel data overflow
-60 ~ 250	-60 ~ 2500	0xFDA8 ~ 0x09C4	Normal range
<-60	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Ni120 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>309	32767	0x7FFF	Channel data overflow

Ni120 type			
-79 ~ 309	-790 ~ 3090	0xFCEA ~ 0x0C12	Normal range
<-79	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Ni200 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>250	32767	0x7FFF	Channel data overflow
-60 ~ 250	-60 ~ 2500	0xFDA8 ~ 0x09C4	Normal range
<-60	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Ni500 type			
------------	--	--	--

Ni500 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>250	32767	0x7FFF	Channel data overflow
-60 ~ 250	-60 ~ 2500	0xFDA8 ~ 0x09C4	Normal range
<-60	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Ni1000 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>250	32767	0x7FFF	Channel data overflow
-60 ~ 250	-60 ~ 2500	0xFDA8 ~ 0x09C4	Normal range
<-60	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the

Ni1000 type			
			actual sensor gear

Cu10 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>159	32767	0x7FFF	Channel data overflow
-59 ~ 159	-590 ~ 1590	0xFDB2 ~ 0x0636	Normal range
<-59	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Cu50 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>159	32767	0x7FFF	Channel data overflow
-59 ~ 159	-590 ~ 1590	0xFDB2 ~ 0x0636	Normal range
<-59	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel

Cu50 type			
			disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Cu53 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>150	32767	0x7FFF	Channel data overflow
-50 ~ 150	-500 ~ 1500	0xFE0C ~ 0x05DC	Normal range
<-50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

Cu100 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>159	32767	0x7FFF	Channel data overflow

Cu100 type			
-59 ~ 159	-590 ~ 1590	0xFDB2 ~ 0x0636	Normal range
<-59	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY83_110 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY83_120 type			
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Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY83_121 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY83_122 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY83_150 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does

			not match the actual sensor gear
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KTY83_151 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY84_130 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel

KTY84_130 type			
			disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY84_150 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

KTY84_151 type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>280	32767	0x7FFF	Channel data overflow

KTY84_151 type			
-40 ~ 280	-400 ~ 2800	0xFE70 ~ 0x0AF0	Normal range
<-40	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

0-40ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>47.03ohm	32767	0x7FFF	Channel data overflow
40ohm ~ 47.03ohm	27648 ~ 32511	0x6C00 ~ 0x7EFF	Channel data exceeds the upper limit
0ohm ~ 40ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>61.25ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

0-80ohm type

0-80ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>94.06ohm	32767	0x7FFF	Channel data overflow
80ohm ~ 94.06ohm	27648~32511	0x6C00 ~ 0x7EFF	Channel data exceeds the upper limit
0ohm ~ 80ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>122.5ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

0-150ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>176.83ohm	32767	0x7FFF	Channel data overflow
150ohm ~ 176.83ohm	27648 ~ 32511	0x6C00 ~ 0x7EFF	Channel data exceeds the upper limit
0ohm ~ 150ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited	-32768	0x8000	The sensor type

0-150ohm type			
range (ohm value>245ohm)			configuration does not match the actual resistor gear

0-300ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>352.77ohm	32767	0x7FFF	Channel data overflow
300ohm ~ 352.77ohm	27648 ~ 32511	0x6C00 ~ 0x7EFF	Channel data exceeds the upper limit
0ohm ~ 300ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>490ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

0-500ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>587.94ohm	32767	0x7FFF	Channel data overflow
500ohm ~ 587.94ohm	27648 ~ 32511	0x6C00 ~ 0x7EFF	Channel data

0-500ohm type			
			exceeds the upper limit
0ohm ~ 500ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>980ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

0-1000ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>1175.89ohm	32767	0x7FFF	Channel data overflow
1000ohm ~ 1175.89ohm	32511	0x7EFF	Channel data exceeds the upper limit
0ohm ~ 1000ohm	27648	0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>1960ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

0-2000 ohm type			
ohm value	Decimal	Hexadecimal	Code value illustrate
>2351.78ohm	32767	0x7FFF	Channel data overflow
2000ohm ~ 2351.78ohm	27648 ~ 32511	0x6C00 ~ 0x7EFF	Channel data exceeds the upper limit
0ohm ~ 2000ohm	0 ~ 27648	0x0000 ~ 0x6C00	Normal range
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range (ohm value>3920ohm)	-32768	0x8000	The sensor type configuration does not match the actual resistor gear

K-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1370	32767	0x7FFF	Channel data overflow
-270 ~ 1370	-2700 ~ 13700	0xF574 ~ 0x3584	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection

K-type			
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

E-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1000	32767	0x7FFF	Channel data overflow
-270 ~ 1000	-2700 ~ 10000	0xF574 ~ 0x2710	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

T-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>400	32767	0x7FFF	Channel data overflow
-270 ~ 400	-2700 ~ 4000	0xF574 ~ 0x0FA0	Normal range

T-type			
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

J-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1200	32767	0x7FFF	Channel data overflow
-210 ~ 1200	-2100 ~ 12000	0xF7CC ~ 0x2E00	Normal range
<-210	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

B-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate

B-type			
>1820	32767	0x7FFF	Channel data overflow
50 ~ 1820	500 ~ 18200	0x01F4 ~ 0x4718	Normal range
<50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

S-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1760	32767	0x7FFF	Channel data overflow
-50 ~ 1760	-500 ~ 17600	0xFE0C ~ 0x44C0	Normal range
<-50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

R-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1770	32767	0x7FFF	Channel data overflow
-50 ~ 1770	-500 ~ 17700	0xFE0C ~ 0x4524	Normal range
<-50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

N-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1300	32767	0x7FFF	Channel data overflow
-270 ~ 1300	-2700 ~ 13000	0xF574 ~ 0x32C8	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the

N-type			
			actual sensor gear

C-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>2320	32767	0x7FFF	Channel data overflow
0 ~ 2320	0 ~ 23200	0x0 ~ 0x5AA0	Normal range
<0	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

L type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>900	32767	0x7FFF	Channel data overflow
-200 ~ 900	-2000 ~ 9000	0xF830 ~ 0x2328	Normal range
<-200	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel

L type			
			disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

$\pm 15.625\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>15.625\text{mV}$	32767	0x7FFF	Channel data overflow
$-15.625\text{mV} \sim 15.625\text{mV}$	$-32767 \sim -32767$	$0x8001 \sim 0x7FFF$	Normal range
$<-15.625\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 31.25\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>31.25\text{mV}$	32767	0x7FFF	Channel data

$\pm 31.25\text{mV}$			
			overflow
$-31.25\text{mV} \sim 31.25\text{mV}$	27648 ~ 32511	0x6C00 ~ 0x7EFF	Normal range
$<-31.25\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 62.5\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>62.5\text{mV}$	32767	0x7FFF	Channel data overflow
$-62.5\text{mV} \sim 62.5\text{mV}$	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
$<-62.5\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 125\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>125\text{mV}$	32767	0x7FFF	Channel data overflow
$-125\text{mV} \sim 125\text{mV}$	$-32767 \sim -32767$	0x8001 ~ 0x7FFF	Normal range
$<-125\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 250\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>250\text{mV}$	32767	0x7FFF	Channel data overflow
$-250\text{mV} \sim 250\text{mV}$	$-32767 \sim -32767$	0x8001 ~ 0x7FFF	Normal range
$<-250\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type

$\pm 250\text{mV}$			
			configuration does not match the actual detection gear

$\pm 500\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>500mV	32767	0x7FFF	Channel data overflow
-500mV ~ 500mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-500mV	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 1000\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>1000mV	32767	0x7FFF	Channel data overflow
-1000mV ~ 1000mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range

$\pm 1000\text{mV}$			
$<-1000\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 2000\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>2000\text{mV}$	32767	0x7FFF	Channel data overflow
$-2000\text{mV} \sim 2000\text{mV}$	$-32767 \sim -32767$	$0x8001 \sim 0x7FFF$	Normal range
$<-2000\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

5.15 DF30-M-8TC

1 Add a module

- ① Go to Device Attempts, click on the DF30-C-PN-RT Coupler on the left to open the Hardware Directory and Device Attempts
- ② Select DF30-M-8TC in the hardware catalog
- ③ Double-click to join the device overview



2 Parameter configuration



Universal configuration

Name	Meaning	Configure items	illustrate
Sampling	sampling	500ms	/

Time	Time	1000ms	/
		2000ms	/
		1280ms (50hz Fre suppre)	Turn on 50Hz frequency suppression
		1064ms (60hz Fre suppre)	Turn on 60Hz frequency suppression
Temperature unit	temperature unit	Degree Celsius	celsius
		Degree Fahrenheit	Fahrenheit
		Kelvin	Kai's degree

Channel settings

Name	Configure items
Sensor type	Disable
	thermocouple: K/E/T/J/B/S/R/N/C/L
	voltagesignal: $\pm 15.625\text{mV} \sim \pm 2000\text{mV}$
Shake level	Shut down
	weak
	middle
	strong
Filter factor	0~255
Temperature compensation	-32768~32767 (Index value 0.1° C)
Over-limit diagnosis	Enable/Disable
Spillover diagnosis	Enable/Disable
Diagnosis of broken wires	Enable/Disable

3 Data monitoring

As shown in the figure below, the input signal of each channel can be monitored, the

first channel receives signal 332, which means 33.2 degrees Celsius, and the other channels show -32768 to indicate disconnection.



名称	地址	显示格式	监视值	修改值	注释
	%IW68	带符号十进制	332		
	%IW70	带符号十进制	-32768		
	%IW72	带符号十进制	-32768		
	%IW74	带符号十进制	-32768		
	%IW76	带符号十进制	-32768		
	%IW78	带符号十进制	-32768		
	%IW80	带符号十进制	-32768		
	%IW82	带符号十进制	-32768		
	<新增>				

Input data: 16Byte		
ByteNo.	WordNo.	Meaning
Byte0-Byte1	Word0	Channel 1 enters the data
Byte2-Byte3	Word1	Channel 2 enters the data
Byte4-Byte5	Word2	Channel 3 enters the data
Byte6-Byte7	Word3	Channel 4 enters the data
Byte8-Byte9	Word4	Channel 5 enters the data
Byte10-Byte11	Word5	Channel 6 enters the data
Byte12-Byte13	Word6	Channel 7 enters the data
Byte14-Byte15	Word7	Channel 8 enters the data

4 Firmware version query



诊断

- 常规
- 诊断状态
- 通道诊断
- 功能

常规

模块

短名称: DF30-M8TC

订货号: DF30-M8TC

固件: V 2.0.3

固件扩展: ---

机架: 0

插槽: 2

5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue

	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

6 The code value corresponds to the temperature

K-type

K-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1370	32767	0x7FFF	Channel data overflow
-270 ~ 1370	-2700 ~ 13700	0xF574 ~ 0x3584	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

E-Type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1000	32767	0x7FFF	Channel data overflow
-270 ~ 1000	-2700 ~ 10000	0xF574 ~ 0x2710	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the

E-Type			
			actual sensor gear

T-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>400	32767	0x7FFF	Channel data overflow
-270 ~ 400	-2700 ~ 4000	0xF574 ~ 0x0FA0	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

J-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1200	32767	0x7FFF	Channel data overflow
-210 ~ 1200	-2100 ~ 12000	0xF7CC ~ 0x2E00	Normal range
<-210	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel

J-type			
			disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

B-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1820	32767	0x7FFF	Channel data overflow
50 ~ 1820	500 ~ 18200	0x01F4 ~ 0x4718	Normal range
<50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

S-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1760	32767	0x7FFF	Channel data overflow

S-type			
-50 ~ 1760	-500 ~ 17600	0xFE0C ~ 0x44C0	Normal range
<-50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

R-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1770	32767	0x7FFF	Channel data overflow
-50 ~ 1770	-500 ~ 17700	0xFE0C ~ 0x4524	Normal range
<-50	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

N-type			
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N-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>1300	32767	0x7FFF	Channel data overflow
-270 ~ 1300	-2700 ~ 13000	0xF574 ~ 0x32C8	Normal range
<-270	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

C-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>2320	32767	0x7FFF	Channel data overflow
0 ~ 2320	0 ~ 23200	0x0 ~ 0x5AA0	Normal range
<0	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the

C-type			
			actual sensor gear

L-type			
Temperature (Celsius)	Decimal	Hexadecimal	Code value illustrate
>900	32767	0x7FFF	Channel data overflow
-200 ~ 900	-2000 ~ 9000	0xF830 ~ 0x2328	Normal range
<-200	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual sensor gear

$\pm 15.625\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>15.625mV	32767	0x7FFF	Channel data overflow
-15.625mV ~ 15.625mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-15.625mV	-32767	0x8001	Channel data overflows

$\pm 15.625\text{mV}$			
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 31.25\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>31.25mV	32767	0x7FFF	Channel data overflow
-31.25mV ~ 31.25mV	27648 ~ 32511	0x6C00 ~ 0x7EFF	Normal range
<-31.25mV	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 62.5\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate

$\pm 62.5\text{mV}$			
$>62.5\text{mV}$	32767	0x7FFF	Channel data overflow
$-62.5\text{mV} \sim 62.5\text{mV}$	$-32767 \sim -32767$	0x8001 ~ 0x7FFF	Normal range
$<-62.5\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 125\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
$>125\text{mV}$	32767	0x7FFF	Channel data overflow
$-125\text{mV} \sim 125\text{mV}$	$-32767 \sim -32767$	0x8001 ~ 0x7FFF	Normal range
$<-125\text{mV}$	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection

$\pm 125\text{mV}$			
			gear

$\pm 250\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>250mV	32767	0x7FFF	Channel data overflow
-250mV ~ 250mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-250mV	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 500\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>500mV	32767	0x7FFF	Channel data overflow
-500mV ~ 500mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-500mV	-32767	0x8001	Channel data overflows

$\pm 500\text{mV}$			
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

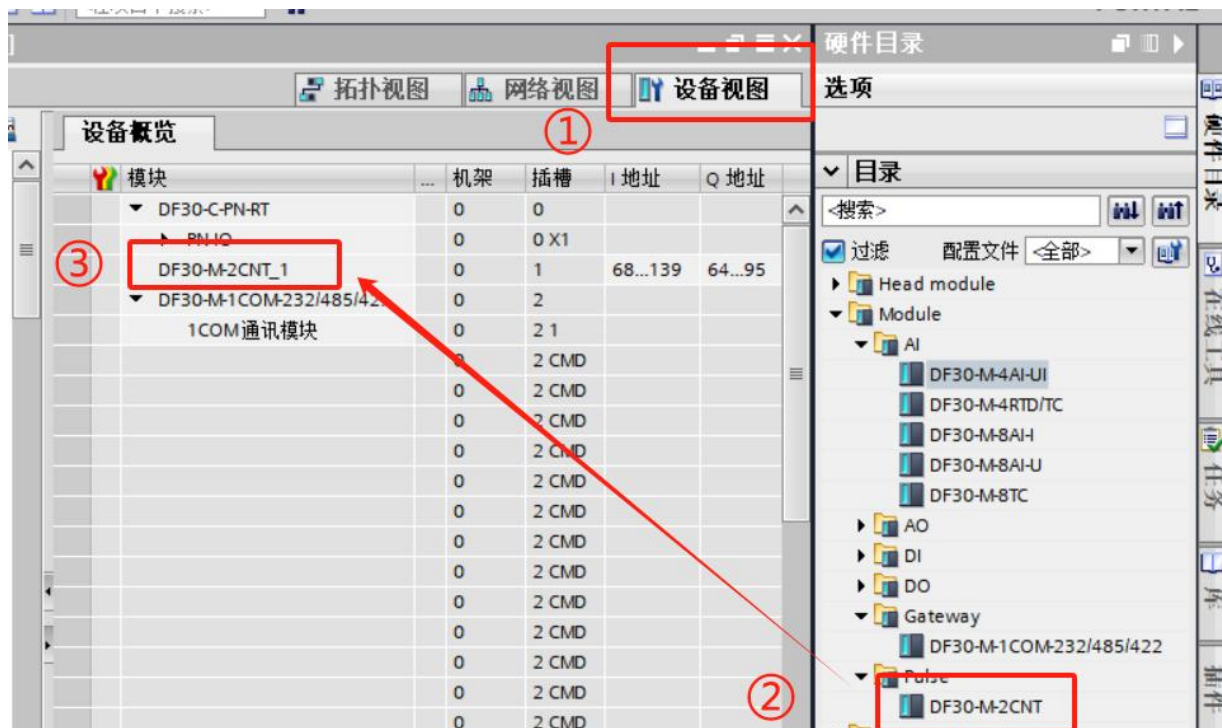
$\pm 1000\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate
>1000mV	32767	0x7FFF	Channel data overflow
-1000mV ~ 1000mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-1000mV	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

$\pm 2000\text{mV}$			
mV value	Decimal	Hexadecimal	Code value illustrate

±2000mV			
>2000mV	32767	0x7FFF	Channel data overflow
-2000mV ~ 2000mV	-32767 ~ -32767	0x8001 ~ 0x7FFF	Normal range
<-2000mV	-32767	0x8001	Channel data overflows
Missing sensor	-32768	0x8000	Channel disconnection
Ultra-limited range	-32768	0x8000	The sensor type configuration does not match the actual detection gear

5.16 DF30-M-2CNT

1 Add a module



2 Parameter configuration

属性

DF30-M-2CNT_1 [DF30-M-2CNT]

常规 IO 变量 系统常数 文本

常规

目录信息

标识与维护

硬件中断

模块参数

通用参数

I/O 地址

通用参数

通道 1

通道 1 计数类型: 线性计数

通道 1 计数方向逻辑: 正逻辑

通道 1 测量类型: 关闭测量

通道 1 信号类型: 正交编码 1 倍频

通道 1 连接类型: 差分输入

通道 1 计数值溢出动作: 停止计数

通道 1 计数滤波: 1Mhz

通道 1 计数方向滤波: 1ms

通道 1 DI 输入滤波: 1ms

通道 1 测速时间基数: 关闭

通道 1 测频采样周期: 1s

通道 1 DI1 信号输入类型: 上升沿

通道 1 DI1 功能: 锁存

通道 1 DI1 作用通道: 通道 1

通道 1 DI1 电平逻辑: 正逻辑

通道 1 DI2 信号输入类型: 上升沿

通道 1 DI2 功能: 锁存

通道 1 DI2 作用通道: 通道 1

通道 1 DI2 电平逻辑: 正逻辑

通道 1 DO1 功能: 数字量普通输出

通道 1 DO1 输出脉宽: 500us

通道 1 DO1 电平逻辑: 正逻辑

通道 1 计数下限值: -2147483648

通道 1 SSI 参数

通道 1 格雷码转换: 关闭

通道 1 校验: 无校验

通道 1 波特率: 843.75 KHz

通道 1 采样间隔时间(单位: 100us): 10

通道 1 帧长度: 25

通道 1 LSB 位号: 0

通道 1 MSB 位号: 24

通道 2

3 Data monitoring

➤ Output data

Name	ByteNo.	Meaning
Channel 1 count command	Byte1	0: Clear and stop counting 1: Turn on count 2: Stop counting
DO1 output control	Byte2	1: DO1 outputs a valid signal, 0: DO1 turns off the

command		output (effective when D01 function is configured as normal output)
retain	Byte3~Byte4	
Channel 1 compares the value 1 setting	Byte5~Byte8	Set range - 2147483648~2147483647
Channel 1 compares value 2 settings	Byte9~Byte12	Set range - 2147483648~2147483647
Channel 1 offset value setting	Byte13~Byte16	Set range - 2147483648~2147483647
Channel 2 count command	Byte17	0: Clear and stop counting 1: Turn on count 2: Stop counting
D02 output control commands	Byte18	1: D01 outputs a valid signal, 0: D01 turns off the output (effective when D01 function is configured as normal output)
Retain	Byte19~Byte20	
Channel 2 compares value 1 setting	Byte21~Byte24	Set range - 2147483648~2147483647
Channel 2 compares the value 2 setting	Byte25~Byte28	Set range - 2147483648~2147483647
Channel 2 offset value setting	Byte29~Byte32	Set range - 2147483648~2147483647

➤ Enter data

Name	ByteNo.	Meaning
Channel 1 error code value	Byte1~Byte2	See appendix ErrCode illustrate
Channel 1 counts the state	Byte3	1: On Count 0: Turn off Count
D11~D12 signal	Byte4	Bit0: The input state of the D11 signal

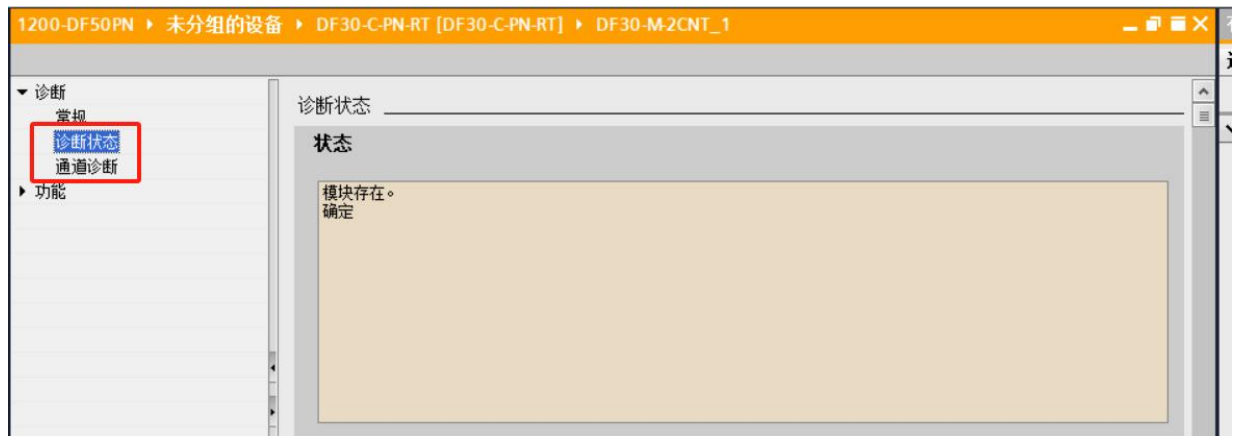
input status		Bit1: DI2 signal input state
D01 output state	Byte5	1: Enable output 0: Turn off output
Channel 1 counts the comparison state	Byte6	Bit0~bit1: 0 (less than 1), 1 (equal to 1), 2 (greater than 1) Bit2~bit3: 0 (less than comparative value 2), 1 (equal to comparative value 2), 2 (greater than comparative value 2)
Channel 1 counts the value	Byte7~Byte10	Range-2147483648~2147483647
Channel 1 measures the integer value part	Byte11~Byte14	The frequency is measured in Hz, and the period is measured in ms
Channel 1 measures the decimal part of the value	Byte15~Byte18	The decimal part of the measured value needs to be divided by 100000000
Retain	Byte19~Byte20	
DI1 rises along the latching value	Byte21~Byte24	Range-2147483648~2147483647
DI2 rising edge latching value	Byte25~Byte28	Range-2147483648~2147483647
DI1 falls to the latching value	Byte29~Byte32	Range-2147483648~2147483647
DI2 drops the latch value	Byte33~Byte36	Range-2147483648~2147483647
Channel 2 error code value	Byte37~Byte38	See appendix ErrCodeillustrate
Channel 2 counts the state	Byte39	1: On Count 0: Turn off Count

DI3~DI4 signal input status	Byte40	Bit0: The DI3 signal input state Bit1: DI4 signal input state
D02 output state	Byte41	1: Enable output 0: Turn off output
Channel 2 counts the comparison state	Byte42	Bit0~bit1: 0 (less than 1), 1 (equal to 1), 2 (greater than 1) Bit2~bit3: 0 (less than the comparative value 2), 1 (equal to the comparative value 2), 2 (greater than the comparative value2)
Channel 2 counts values	Byte43~Byte46	Range-2147483648~2147483647
Channel 2 measures the integer part of the value	Byte47~Byte50	The frequency is measured in Hz, and the period is measured in ms
Channel 2 measures the decimal part of the value	Byte51~Byte54	The decimal part of the measured value needs to be divided by 100000000
retain	Byte55~Byte56	
DI3 rising edge lock value	Byte57~Byte60	range-2147483648~2147483647
DI4 rising edge lock value	Byte61~Byte64	Range-2147483648~2147483647
DI3 drops the lock-up value	Byte65~Byte68	Range-2147483648~2147483647
DI4 drops the latch value	Byte69~Byte72	Range-2147483648~2147483647

4 Firmware version query



5 Module incorrect display



The following table lists all possible errors:

Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in

		place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue
	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal

		of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

1. Application example: Differential input quadrature encoder 1 octave count, two DI double edge triggers, and one DO comparison output.

通道 1

通道 1 计数类型:	线性计数
通道 1 计数方向逻辑:	正逻辑
通道 1 测里类型:	测里频率
通道 1 信号类型:	正交编码1倍频
通道 1 连接类型:	差分输入
通道 1 计数值溢出动作:	停止计数
通道 1 计数滤波:	1Mhz
通道 1 计数方向滤波:	1ms
通道 1 DI 输入滤波:	1ms
通道 1 测速时间基数:	关闭
通道 1 测频率采样周期:	1s
通道 1 DI1 信号输入类型:	双边沿
通道 1 DI1 功能:	锁存
通道 1 DI1 作用通道:	通道 1
通道 1 DI1 电平逻辑:	正逻辑
通道 1 DI2 信号输入类型:	双边沿
通道 1 DI2 功能:	锁存
通道 1 DI2 作用通道:	通道 1
通道 1 DI2 电平逻辑:	正逻辑
通道 1 DO1 功能:	比较输出
通道 1 DO1 输出脉宽:	500us
通道 1 DO1 电平逻辑:	正逻辑
通道 1 计数安全模式:	保持当前计数值
通道 1 DO 安全模式:	输出逻辑 0
通道 1 计数上限值:	2147483647
通道 1 计数下限值:	-2147483648

Process Data Manipulation:

地址	显示格式	监视值	修改值		注释
%QB0	十六进制	16#01	16#01	☒ 	通道1计数命令
%QB1	十六进制	16#00		☐	DO1输出控制命令
%QD4	带符号十进制	3000000	3000000	☒ 	通道1比较值1
%QD8	带符号十进制	6000000	6000000	☒ 	通道1比较值2
%QD12	十六进制	16#0000_0000		☐	通道1偏移值设置
%IWD	十六进制	16#0000		☐	通道1错误码值
%IB2	十六进制	16#01		☐	通道1计数状态
%I3.1	布尔型	☒ TRUE		☐	DI1信号输入状态
%I3.2	布尔型	☐ FALSE		☐	DI2信号输入状态
%IB4	十六进制	16#00		☐	DO1输出状态
%IB5	十六进制	16#02		☐	通道1比较状态
%ID6	带符号十进制	3292165		☐	通道1计数值
%ID10	无符号十进制	20000		☐	通道1测量值整数部分
%ID20	带符号十进制	819443		☐	DI1上升沿锁存值
%ID24	带符号十进制	906052		☐	DI2上升沿锁存值
%ID28	带符号十进制	781769		☐	DI1下降沿锁存值
%ID32	带符号十进制	906047		☐	DI2下降沿锁存值
<新增>				☐	

2. Application example: SSI encoder input, 2-channel DI normal input, 1-channel DO output, take Wuxi Banghe multi-turn encoder M1213-25bit as an example.

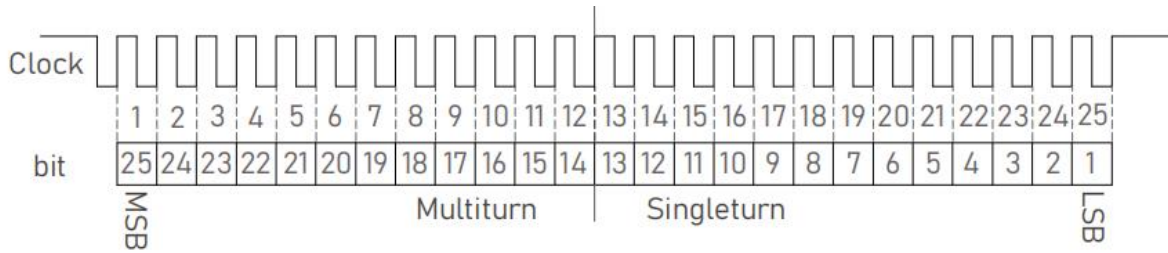
- Wiring operation: Connect the Clock+ and Clock- of the encoder to 1A+ and 1A- respectively, and connect the Data+ and Data- of the encoder to 1B+ and 1B- respectively.
- Parameter configuration: According to the manual rate requirements of the encoder: our SSI clock frequency is configured to 843.75khz, and the data read interval is 1ms.

Synchronous serial data transfer timing:

- The number of SSI host clocks depends on the number of bits of position data in the encoder.
- The clock frequency supports 100-1000kHz
- The data read interval is greater than 300uS

➤ According to the encoding manual data format, the frame length is a total of 25, consisting of a low 12-bit single-turn position value and a high 13-bit turn value, Let's take an example of a lap position value and convert the gray code to a decimal number.

Multi-Turn Encoder SSI Data Format (M1214-25bit)



通道 1

通道 1 计数类型: 线性计数

通道 1 计数方向逻辑: 正逻辑

通道 1 测速类型: 关闭测速

通道 1 信号类型: SSI

通道 1 连接类型: 差分输入

通道 1 计数值溢出动作: 停止计数

通道 1 计数滤波: 1Mhz

通道 1 计数方向滤波: 1ms

通道 1 DI 输入滤波: 1ms

通道 1 测速时间基数: 关闭

通道 1 测频率采样周期: 1s

通道 1 DI1 信号输入类型: 双边沿

通道 1 DI1 功能: 普通数字量输入

通道 1 DI1 作用通道: 通道 1

通道 1 DI1 电平逻辑: 正逻辑

通道 1 DI2 信号输入类型: 双边沿

通道 1 DI2 功能: 普通数字量输入

通道 1 DI2 作用通道: 通道 1

通道 1 DI2 电平逻辑: 正逻辑

通道 1 DO1 功能: 数字量普通输出

通道 1 DO1 输出脉宽: 500us

通道 1 DO1 电平逻辑: 正逻辑

通道 1 计数安全模式: 保持当前计数值

通道 1 DO 安全模式: 输出逻辑 0

通道 1 计数上限值: 2147483647

通道 1 计数下限值: -2147483648

通道 1 SSI 参数

通道 1 格雷码转换: 开启

通道 1 校验: 无校验

通道 1 波特率: 843.75 KHz

通道 1 采样间隔时间(单位: 100us): 10

通道 1 帧长度: 25

通道 1 LSB位号: 0

通道 1 MSB位号: 12

● Process Data Manipulation:

地址	显示格式	监视值	修改值		注释
%QB0	十六进制	16#01	16#01	☒ 	通道1计数命令
%QB1	十六进制	16#01	16#01	☒ 	DO1输出控制命令
%QD4	带符号十进制	0	0	☒ 	通道1比较值1
%QD8	带符号十进制	0	0	☒ 	通道1比较值2
%QD12	十六进制	16#0000_0000		☐	通道1偏移值设置
%IWD	十六进制	16#0000		☐	通道1错误码值
%IB2	十六进制	16#01		☐	通道1计数状态
%I3.1	布尔型	☒ TRUE		☐	DI1信号输入状态
%I3.2	布尔型	☐ FALSE		☐	DI2信号输入状态
%IB4	十六进制	16#01		☐	DO1输出状态
%IB5	十六进制	16#0A		☐	通道1比较状态
%ID6	带符号十进制	1500		☐	通道1计数值
%ID10	无符号十进制	0		☐	通道1测量值整数部分
%ID20	带符号十进制	0		☐	DI1上升沿锁存值
%ID24	带符号十进制	0		☐	DI2上升沿锁存值
%ID28	带符号十进制	0		☐	DI1下降沿锁存值
%ID32	带符号十进制	0		☐	DI2下降沿锁存值

3. Application example: single-ended input quadrature encoder with 1 octave and 1 DO comparison output.

- Wiring operation: The 0V of the encoder is connected to the COM port, and the A and B phases are connected to DI1 and DI2 respectively.

- Parameter configuration:

通道 1

通道 1 计数类型: 线性计数

通道 1 计数方向逻辑: 正逻辑

通道 1 测量类型: 测量频率

通道 1 信号类型: 正交编码1倍频

通道 1 连接类型: 单端输入

通道 1 计数值溢出动作: 停止计数

通道 1 计数滤波: 1Mhz

通道 1 计数方向滤波: 1ms

通道 1 DI 输入滤波: 1ms

通道 1 测速时间基数: 关闭

通道 1 测频率采样周期: 1s

通道 1 DI1 信号输入类型: 双边沿

通道 1 DI1 功能: 计数

通道 1 DI1 作用通道: 通道 1

通道 1 DI1 电平逻辑: 正逻辑

通道 1 DI2 信号输入类型: 双边沿

通道 1 DI2 功能: 计数

通道 1 DI2 作用通道: 通道 1

通道 1 DI2 电平逻辑: 正逻辑

通道 1 DO1 功能: 比较输出

通道 1 DO1 输出脉宽: 500us

通道 1 DO1 电平逻辑: 正逻辑

通道 1 计数安全模式: 保持当前计数值

通道 1 DO 安全模式: 输出逻辑 0

通道 1 计数上限值: 2147483647

通道 1 计数下限值: -2147483648

- Process data manipulation:

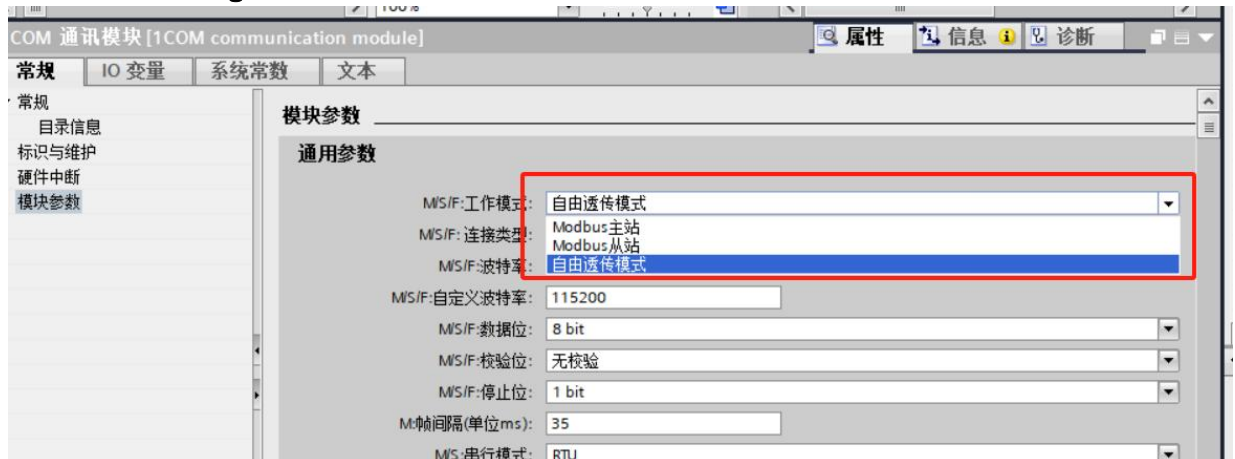
地址	显示格式	监视值	修改值		注释
%QB0	十六进制	16#01	16#01	☒	通道1计数命令
%QB1	十六进制	16#01	16#01	☒	DO1输出控制命令
%QD4	带符号十进制	20000	20000	☒	通道1比较值1
%QD8	带符号十进制	80000	80000	☒	通道1比较值2
%QD12	十六进制	16#0000_0000		☐	通道1偏移值设置
				☐	
%IW0	十六进制	16#0000		☐	通道1错误码值
%IB2	十六进制	16#01		☐	通道1计数状态
%I3.1	布尔型	☐ FALSE		☐	DI1信号输入状态
%I3.2	布尔型	☐ FALSE		☐	DI2信号输入状态
%IB4	十六进制	16#00		☐	DO1输出状态
%IB5	十六进制	16#0A		☐	通道1比较状态
%ID6	带符号十进制	87619		☐	通道1计数值
%ID10	无符号十进制	20000		☐	通道1测量值整数部分
%ID20	带符号十进制	0		☐	DI1上升沿锁存值
%ID24	带符号十进制	0		☐	DI2上升沿锁存值
%ID28	带符号十进制	0		☐	DI1下降沿锁存值
%ID32	带符号十进制	0		☐	DI2下降沿锁存值
<新增>				☐	

5.17 DF30-M-1COM-232/485/422

1 Add a module

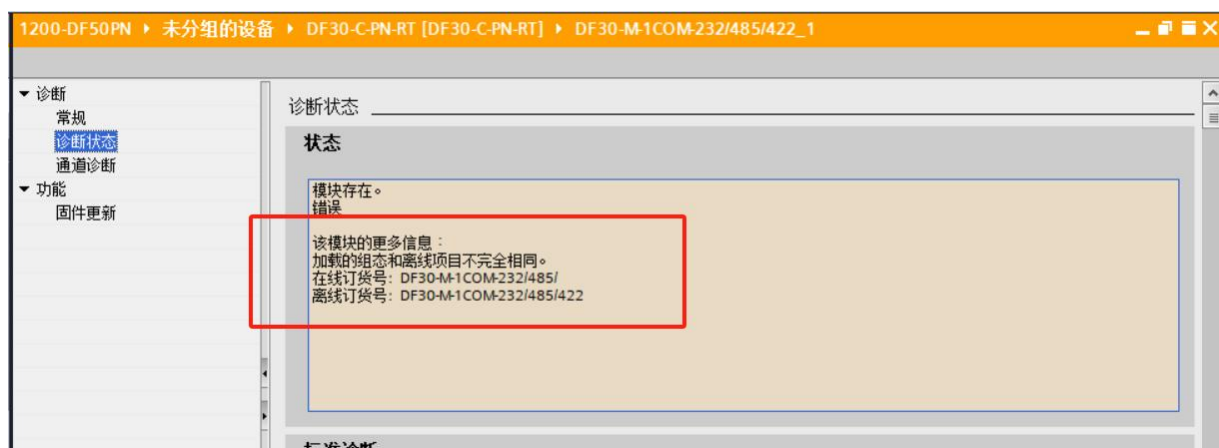


2 Parameter configuration



M: represents Modbus master, S: indicates Modbus slave, and F: represents free transmission

4 Module incorrect display



The following table lists all possible errors:

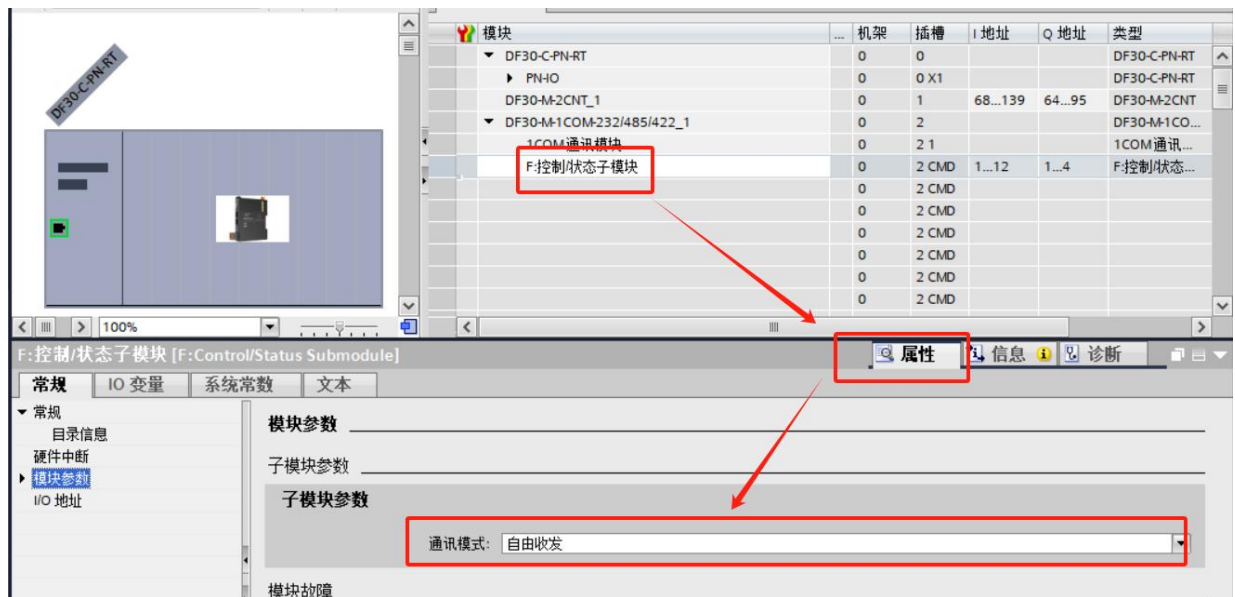
Fault location	Fault name	Workaround/Cause
Coupler error	The backplane is not scanned to the module	The protocol is not scanned to the module
	The number of modules is exceeded	The number of modules is exceeded
	The configuration IO module does not match the card that is actually scanned	Check whether the configuration module model and sequence are consistent with the actual product
	Hotswap fails, and the reinserted card does not match the original card ID	Check the module model
Module error	The backplane bus timed out	Check that the module is installed in place
	flash read failure	Power back on or contact the vendor to resolve the issue
	Wrong configuration parameters	Check whether the configuration parameters are reasonable
	Abnormal power supply	Check the power supply
	ADC abnormalities	Power back on or contact the vendor to resolve the issue

	DAC abnormalities	Power back on or contact the vendor to resolve the issue
Module channel error	Overcurrent	Channel overflow
	Overheating	The chip temperature is overheated
	short circuit	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Open circuit/disconnection	Check the external wiring of the module channel; The external wiring is correct, it is recommended to check for internal hardware problems or replace the module
	Overflow	Check whether the external input signal of the module is abnormal
	underflow	Check whether the external input signal of the module is abnormal
	Hyper Limit	Check whether the external input signal of the module is abnormal
	Exceeding the lower limit	Check whether the external input signal of the module is abnormal
	Wrong sensor type	Check whether the access sensor and the configuration item match

Application example: Free mode

- There are two data transmission modes in free mode, namely free transmission and

reception and request-response, which are configured in the control/state submodule in free mode



F: Control/state submodule process data

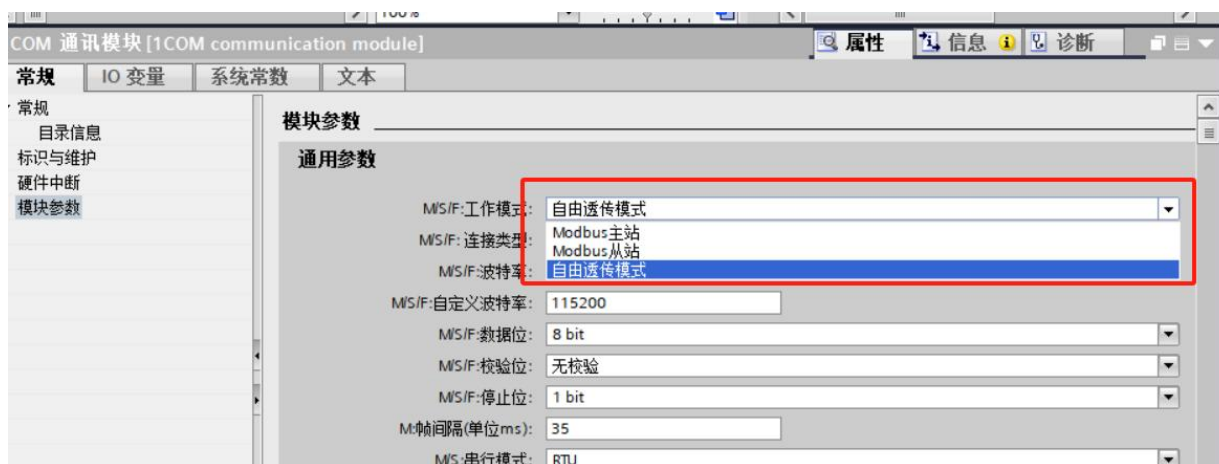
Output data			
byte	位	Meaning	remark
Byte1	Bit0	Send trigger	Control words
	Bit1	The operation is complete and reset	
	Bit2	Check error reset	
	Bit3	Timeout error reset	
	Bit4	Reset the number of errors	
	Bit5	Reset the number of receptions	
	Bit6	Receive data to zero	
	Bit7	Reset the number of sends	
Byte2	Unsigned8	retain	
Byte3~Byte4	Unsigned16	Send data length	

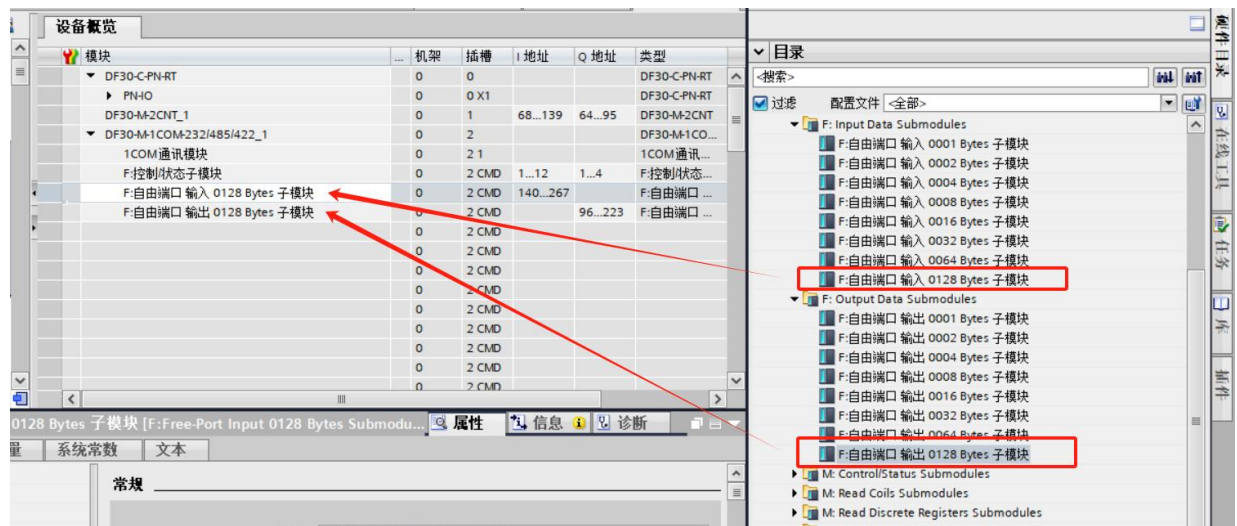
Enter data

Byte	Bit	Meaning	Remark
Byte1~Byte2	Unsigned16	Control word readback	
Byte3~Byte4	Unsigned16	The number of times the data is sent	
Byte5	Bit0	Send busy status	Status word
	Bit1	The operation completion status	
	Bit2	Validate the error status	
	Bit3	Timeout error status	
	Bit4~Bit7	retain	
Byte6	Unsigned8	retain	
Byte7~Byte8	Unsigned16	Error counting	
Byte9~Byte10	Unsigned16	Number of receptions	
Byte11~Byte12	Unsigned16	Receive data length	

➤ Operation illustrate

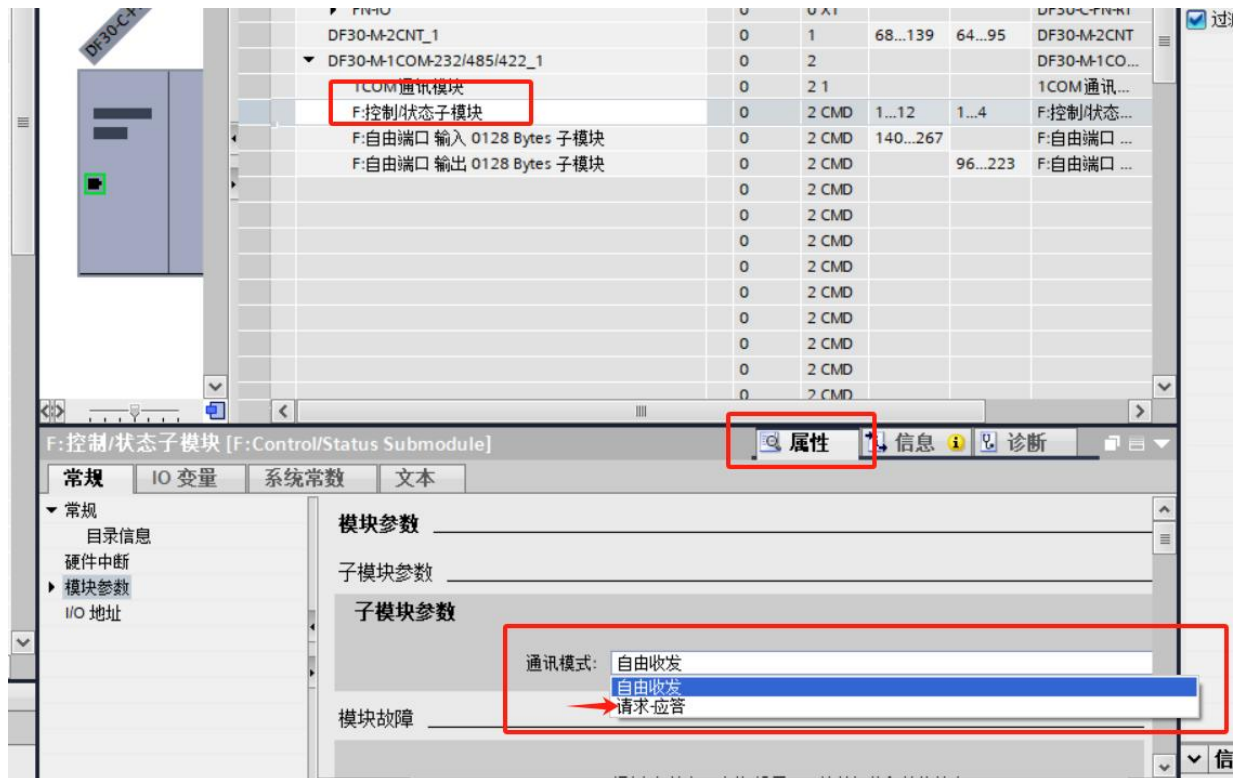
The data transmission method is set to free sending and receiving





- Drag the input and output submodules of the F: free port into the workspace, and the module provides a variety of submodules with a fixed maximum data length, as well as individual input or output class types.
- Write the length of the target sent data through the F: control/status submodule, and after filling in the data to be sent in the output submodule, start a single send from 0 to 1 of the control word: during the sending period, the status word is busy with the mark position 1 and the flag bit is cleared, and after the sending is completed, the busy flag bit is cleared, the flag position 1 is completed and the send counter is triggered to increase itself.
- When received, the received data will be stored in the input submodule for reading, and the actual length of the received data will be automatically synchronized at the completion mark position 1 of the status word in the F: Control/Status submodule (this length is not limited by the capacity of the input submodule), and the receive counter will be automatically incremented.

The data transmission method is request-answer

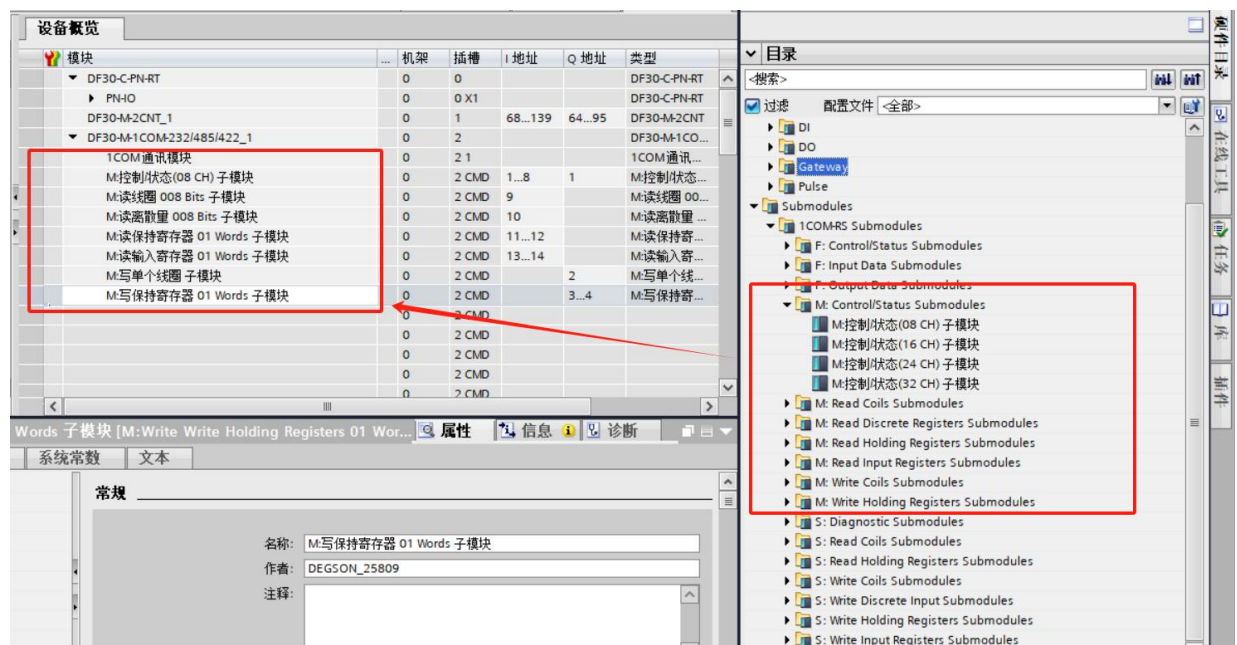


Write the length of the data to be sent in the F: control/status submodule, write the output data in the output submodule, and then change the send trigger in the control word from 0 to 1, realize the data once, the busy flag position of the status word during the sending process 1, complete the flag bit to clear the zero, after the sending is completed, the busy flag bit is cleared, the number of sends is added by 1, when the response is received within the timeout waiting time, complete the flag position 1, update the actual data length received, complete the status flag position 1, If no response is received within the timeout, the completion flag position is 1, the timeout error status position is 1, and the error count value is added by 1.

模块	机架	插槽	I 地址	Q 地址	类型
DF30-C-PN-RT	0	0			DF30-C-PN-RT
PN-IO	0	0 X1			DF30-C-PN-RT
DF30-M-2CNT_1	0	1	68...139	64...95	DF30-M-2CNT
1COM 通讯模块	0	2 1			1COM 通讯...
F:控制/状态子模块	0	2 CMD	1...12	1...4	F:控制/状态...
F:自由端口 输入 0001 Bytes 子模块	0	2 CMD	13		F:自由端口 ...
F:自由端口 输出 0001 Bytes 子模块	0	2 CMD		5	F:自由端口 ...
	0	2 CMD			
	0	2 CMD			

Application example: Master mode

The control/state submodule has 8~32 channels to choose from, and the corresponding control/status submodule can be selected according to the number of channels configured as needed. For example, if you configure a total of 6 channels, then select the M: Control/State (08 CH) submodule.



M: Control/state submodule process data

Each channel corresponds to one byte of error code input and one bit of control output. Here we take the process data of the M: Control/Status (08 CH) submodule as an example.

Output data			
Byte	Bit	Meaning	Remark
Byte1	Bit0	Channel 1 outputs the control bit	Control words (Effective only when M: Configure items are triggered at level or rising edge)
	Bit1	Channel 2 outputs the control bit	

	Bit2	Channel 3 outputs the control bit	
	Bit3	Channel 4 outputs the control bit	
	Bit4	Channel 5 outputs the control bit	
	Bit5	Channel 6 outputs the control bit	
	Bit6	Channel 7 outputs the control bit	
	Bit7	Channel 8 outputs the control bit	

Enter data			
Byte	Bit	Meaning	Remark
Byte1	Unsigned8	Channel 1 error code	Error Code Meaning See the list of error codes below
Byte2	Unsigned8	Channel 2 error code	
Byte3	Unsigned8	Channel 3 error code	
Byte4	Unsigned8	Channel 4 error code	
Byte5	Unsigned8	Channel 5 error code	
Byte6	Unsigned8	Channel 6 error code	
Byte7	Unsigned8	Channel 7 error code	
Byte8	Unsigned8	Channel 8 error code	

Table 1: Error Code Table

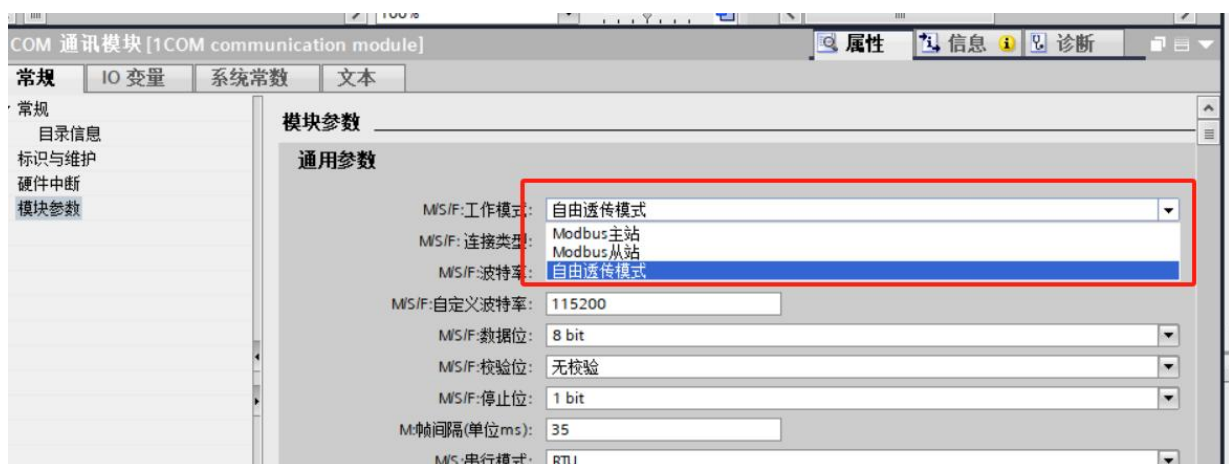
Error code	Meaning
0x00	There are no errors
0x01	Illegal function code, the device does not support the current function code, please refer to the slave manual to select the

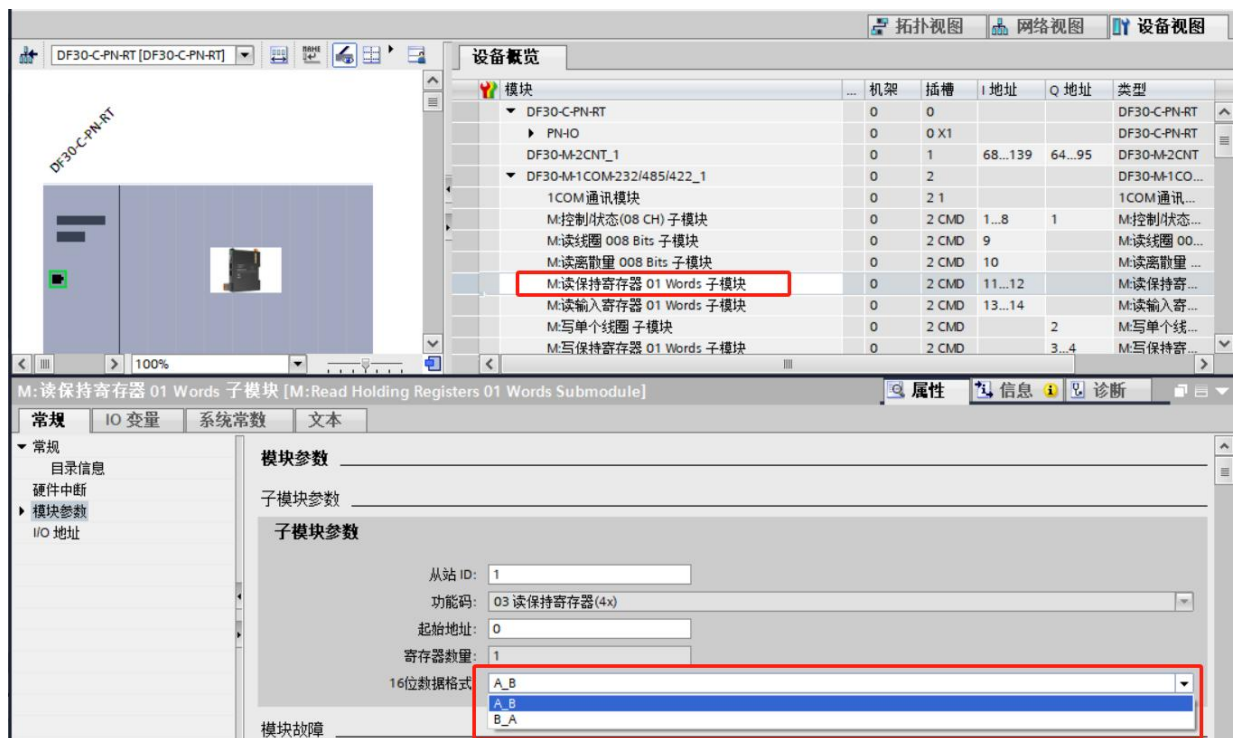
	corresponding function code module
0x02	Illegal data address, device data exceeds its address range, refer to the slave manual to modify the data starting address or data length.
0x03	Illegal data values, written data content that does not meet the requirements, such as exceeding the range or formatting error
0x04	From the internal fault of the device, check if the slave hardware is damaged
0x05	Delay response from the device
0x06	From the equipment busy
0x08	Memory parity error, data error detected when the device reads and writes non-volatile memory
0x0C	Communication CRC error, check the communication line
0x0D	Disconnect from the slave and check whether the bus connection or slave device is working or if the slave ID is correct

➤ Operation illustrate

Double-click the channel submodule, click Properties, and select the module parameters to configure the slave ID and start address of the channel.

When a submodule is a read-write hold register or a read-input register, the data format can be configured:





Used to convert the order of high and low bytes.

1. M: The data output mode is configured to poll mode

Each channel communicates with the slave according to the set polling delay time.

2. M: The data output mode is configured to trigger an event

When the data transmission of the write data channel changes, it communicates with the slave once

3. M: The data output mode is configured to level trigger

M: The control position of the control/status submodule channel is 1, and the corresponding channel communicates with the slave.

4. M: Data output mode is configured to rise edge trigger

M: When the control bit of the control/status submodule channel changes from 0 to 1 the corresponding channel communicates with the slave once.

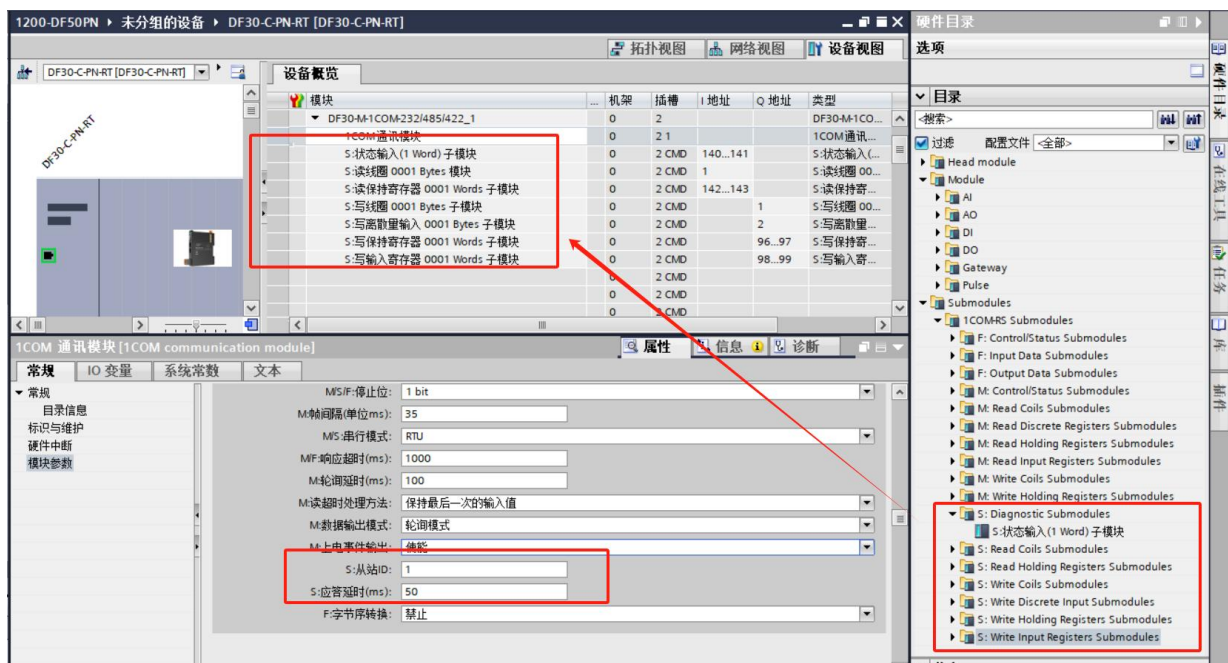
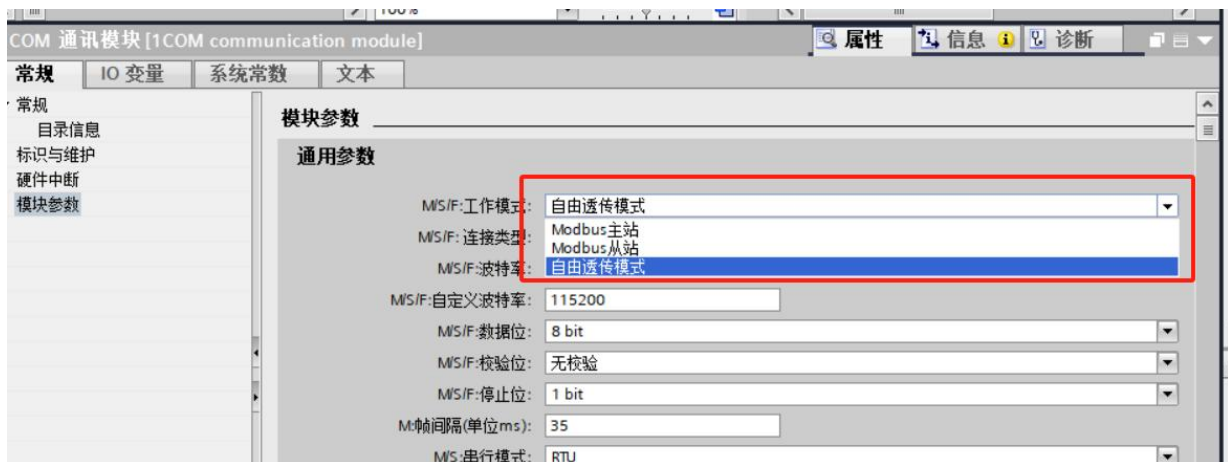
Application example: Slave mode

➤ S: Enter the state (1 word) submodule process data

Enter data			
Byte	Bit	Meaning	Remark
Byte1	Unsigned8	retain	

➤ Operation illustrate

In the module configuration parameters, you can set the slave ID and answer delay:



The operating addresses and sizes of each register are shown in the table below:

Register Name	Starting address	End address	Number of registers
coil	0	1023	1024

Discrete variables	0	1023	1024
Enter the register	0	127	128
Keep registers	0	127	128

6 appendix

6.1 Trouble code illustrate

Fault location	Fault Name	Trouble code	Solution/Cause
Coupler	The protocol stack is not scanned to the module	1	Check whether the module is tightly plugged in and whether the buckle is fastened
	The number of modules is exceeded	2	Check the number of backplane modules
	The configuration I/O module does not match the card that is actually scanned	3	Check whether the type number and sequence of the configuration module are consistent with the actual module
	The configuration configuration list is not downloaded	4	

	Hot-swap failed, and the module type number was wrong	5	Check whether the newly plugged module signal is the same as the original
Module	The backplane bus timed out	1	Check that the module is installed in place
	Flash read failure	3	Power back or contact the vendor
	Wrong configuration parameters	4	Check whether the configuration parameters are reasonable
	Abnormal power supply	5	Check the power supply
	ADC abnormalities	6	Power back or contact the vendor
	DAC abnormalities	7	Power back or contact the vendor
Channel	Overcurrent	1	Check if the load is too large
	Overheating	2	Check the external wiring and whether the load is too large
	Short circuit	3	Check the external wiring of the channel
	Open circuit/disconnection	4	Check the external wiring of the channel
	Overflow	5	Check if the external input signal is normal
	Underflow	6	Check if the external input signal is normal
	Hyper Limit	7	Check if the external input signal is normal
	Exceeding the lower limit	8	Check if the external input

			signal is normal
	Wrong sensor type	9	Check whether the access sensor and the Configure items match