DF50-C-CC-FB

Adapter

User Manual
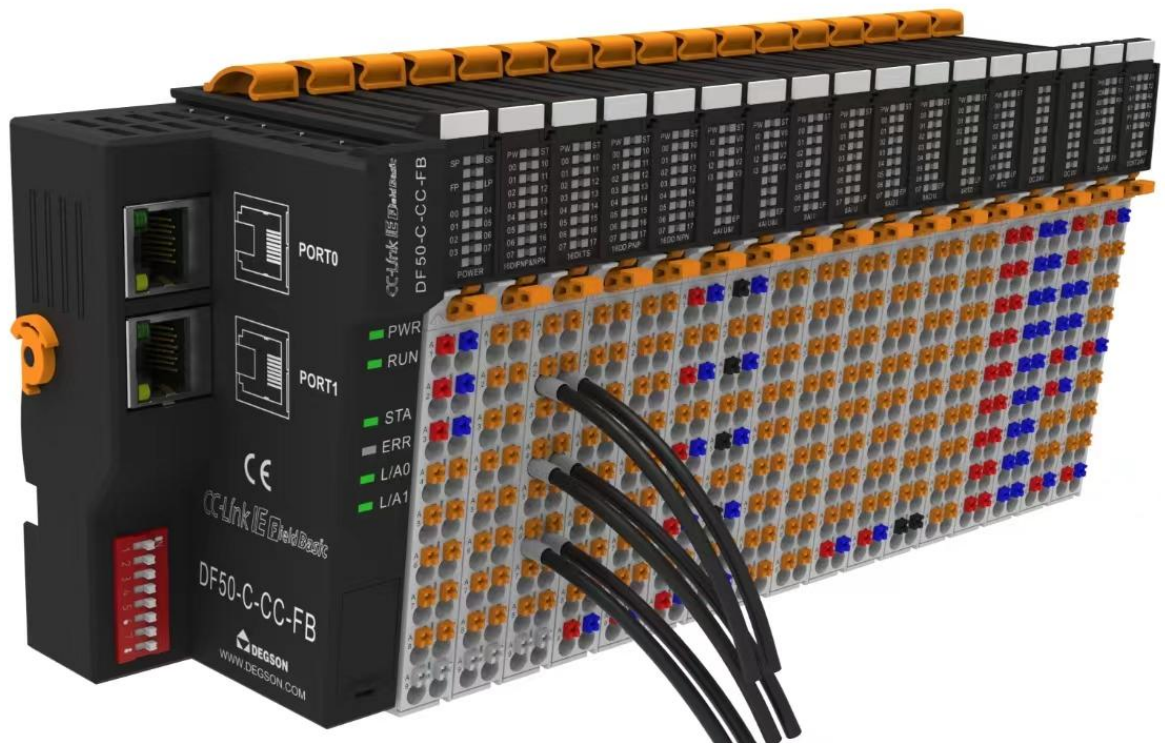
Version History

date	Version	describe
2024/3/13	v1.0.0	Release version
2024/8/20	v1.0.1	New modules: DF50-M-2CNT-PIL-24, DF50-M-2CNT-PIL-5, DF50-M-1COM-232/485/422
2024/10/10	v1.0.2	AddedDF50-M-32DI-P/N,DF50-M-32DO-N,DF50-M-32DO-P,DF50-M-16DI-16DO-N,DF50-M-16DI-16DO-P、DF50-M-4DOR、DF50-M-4DO-P-2A usage routine

Preface

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Preface

Preface

Scope of this document

This document is applicable toDF50Series RemoteIOsystem

Introduction

This manual mainly introducesDF50Series RemoteI/OTechnical specifications, installation, and debugging of the module.

The main contents include:

● System Overview: Mainly introduces the product ordering information, product composition, system architecture, product transportation, storage environment, etc. of the DF50 series remote I/O modules;

● Product Description: Introduces the technical parameters of the DF50 series remote I/O modules;

● Installation and removal guide: Introduces the installation and removal of DF50 series remote I/O modules;

● Mechanical and electrical drawings: DF50 remote IO module dimension drawing and electrical wiring diagram;

● User Guide: Introduces the communication between DF50 series remote I/O modules and mainstream PLCs through examples.

Precautions

This document describes in detailDF50Series RemoteI/OThe usage of the module is for people with certain engineering experience. DEGSONNo responsibility.

Before attempting to use the device, please read the relevant precautions of the device carefully and be sure to comply with the installation and commissioning safety precautions and operating procedures. For the possible hazards and damages caused by incorrect use of the device, please refer to the following symbols.

DANGER

Imminent risk to life!

Notes with the signal word Danger warnyou of situations which will result in seriousnjury or death if you do not follow the instructions given in this manual.

WARNING

Possible danger to life!

Notes with the signal word " Warning " warnyou of situations which may result in seriousinjury or death if you do not follow the instructions given in this manua

ATTENTION

Material damageNotes

With the signal word " Attention " warn you of hazardswhich may result in material damage

Target customers

This manual provides information aboutDF50Series RemoteI/OInformation on installation and commissioning of modules, designed for engineers, installers, maintenance personnel, and electricians with general automation knowledge.

Recycling and Disposal

To ensure environmentally friendly recycling of your old device, please contact a certified electronic waste disposal agency.

1.Product installation and removal

1.1.Installation

- When installing the module, the DIN rail lock at the bottom of the module can be safely and reliably installed on the 35 mm DIN rail. When installing the module, you need to align the notch, push the module toward the DIN latch, and place the module on the DIN rail.

- InstalladapterhourThere is a manual buckle on the upper and left side for locking the guide rail.
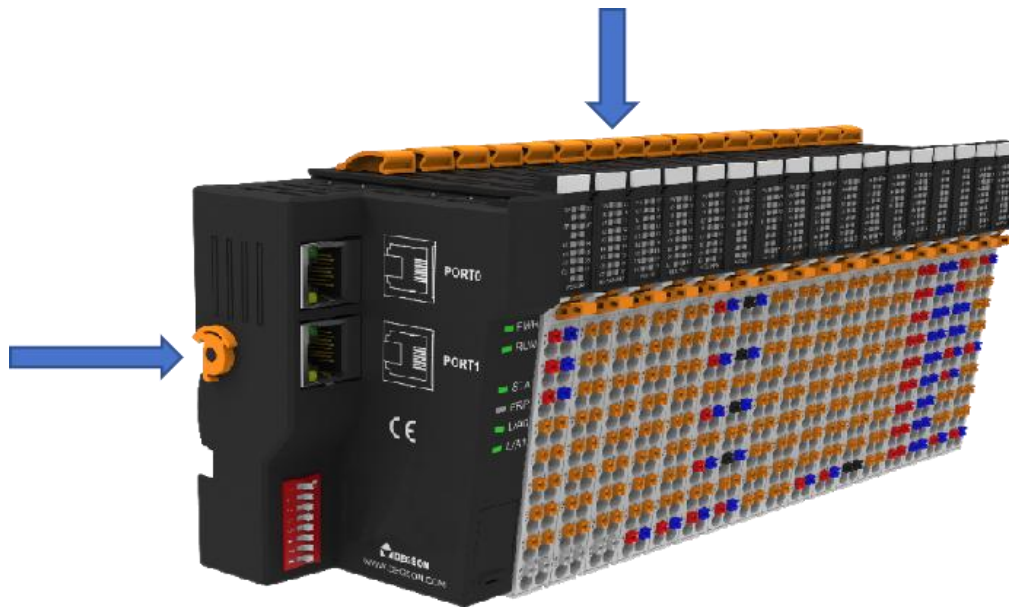
1.2.Grounding protection

● There is a metal spring on the back of the module, which is used to effectively ground the guide rail. The metal spring is connected to the grounding PE of the adapter module.
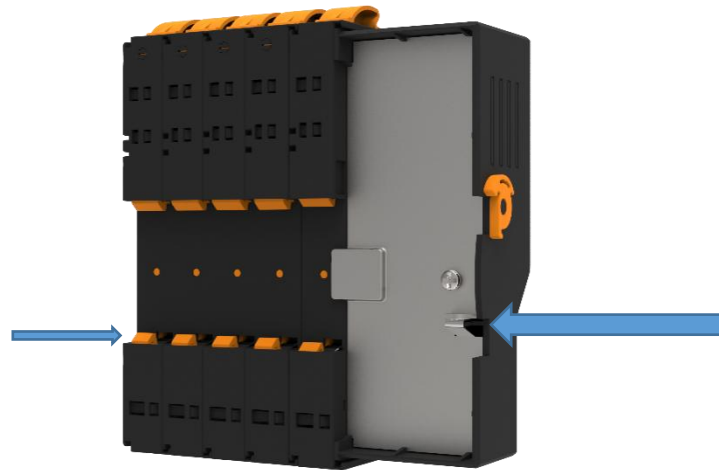
1.3.Disassembly method

1.3.1 Module disassembly

First, remove all signal cables or power cables from the module, then press the latch (arrow above). When removing the adapter module, you also need to open the rail lock clockwise (arrow on the left).

1.3.2 TerminalsDisassembly

The terminals can be removed individually by pressing the snaps.
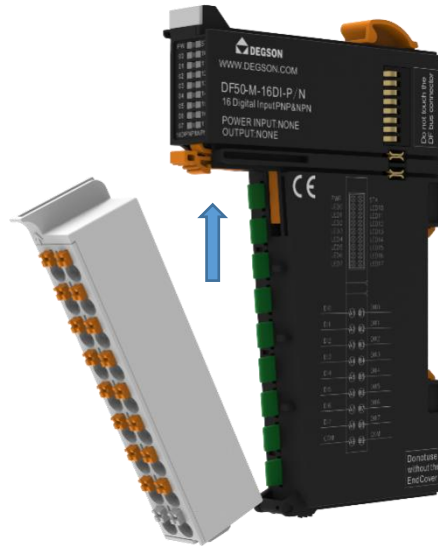
1.3.3 Cold pressed terminal

It is recommended to use cables with a core size less than 1.5 mm². The reference for the cold terminal parameters is as follows
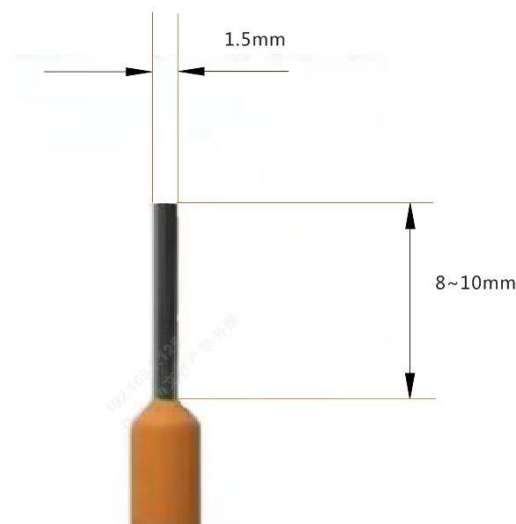
TerminalsButton Recommended Userecommenduse0.4*2.5Screwdriver press down.
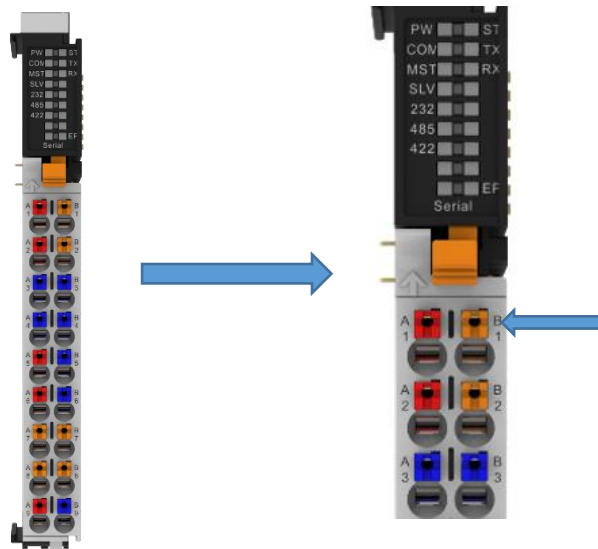
1.4. Precautions

If you encounter a module that is difficult to install, do not use brute force to install it.waivedDamage to the current module or other modules; remove the module from the rail and check whether there is any abnormality in the module (Such as foreign body blockagewait),After confirming that there is no problem, plug and unplug.

2.On siteBus adapter

➢

On siteBus system	describe	model
CC-Link IE Field Basic	CC-Link IE Field BasicBus, 2 RJ45,mostExpandable to 32 modules, 24VDC	DF50-C-CC-FB

1. CC-Link IE Field Basic fieldbus adapter (DF50-C-CC-FB)

➢ DF50-C-CC-FB This fieldbus adapter acts as a slave with CC-Link IE Field BasicPLCCC-Link IE Field Basic is an open industrial Ethernet standard in the field of automation. It can automatically configure and generate local process images including analog, digital and special function modules. Analog modules and special function modules transmit data in the form of words or bytes, and digital modules transmit data in the form of bits.

➢ The fieldbus coupler connects scalable I/O modules to real-time Industrial Ethernet systems.

➢ It also comes with a dual-port switch,Line structures can be easily created without using any other network components.
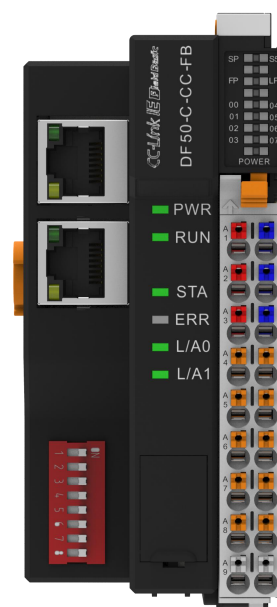
1.1. Specifications

Technical Information	
Specifications	CC-Link IE Field BasicBus, 2 RJ45,mostExpandable to 32 modules,
Product Description	CC-Link IE Field Basic
Connection	2 X RJ45, integrated switch function
Transfer rate	10/100Mbps, full-duplex
Transmission distance	≤100 meters
Logical station number	1~4
Maximum data volume	RX, RY	4×64 bits
	RWr, RWw	4×32 Words
Transmission medium	Category 5 twisted pair
Isolation method	Electrically isolated from the field
Alarm function	Diagnostic alarm, process alarm
Connection	PUSH-IN Terminal Blocks
Internal system electrical terminal rated	24V DC (20.4V DC~ 28.8V DC)
Internal system electrical terminal rated	0.75A (typical at 24V)
Internal system rated voltage output	5VDC
Internal system rated current output	2A
Internal load electrical terminal rated	24V DC (20.4V DC~ 28.8V DC)
Internal load electrical terminal rated	0.75A (typical at 24V)
Internal load rated voltage output	24V DC (20.4V DC~ 28.8V DC)
Internal load rated current output	0.75A (typical at 24V)

DIparameter	
Number of channels	8
Signal Type	NPN & PNP
Signal range	"ON" signal	Voltage difference > 11VDC (voltage difference with common input)
	"OFF" signal	Voltage difference <5VDC (voltage difference with common input)
Data size	1 Byte
Connection Type	1-wire, Type 1/Type 3, according to IEC 61131-2
Filter time	0-40ms configurable
Input Impedance	>7.5kΩ
Input Action Display	When the input is in driving state, the input indicator light is on.
IO Mapping	Support PressCharacteraccess

wiringparameter	
Connection technology:	CC-Link IE Field Basic: 2 x RJ-45
Connection technology	PUSH-IN Terminal Blocks
Connection Type	System/Field Power Supply/Input
Wire crimping area	0.14～1.5mm2/26～16AWG
Stripping length	8～10mm
Installation	DIN-35 rail

Materialparameter	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE

environmentRequire	
Allowable ambient temperature	-25～60℃
Permissible ambient temperature	-40～85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard

Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Allowable H2S contaminant	10ppm
Allowable SO2 pollutant concentration at	25ppm

Fieldbus adapter

1.2. Hardware Interface
1.2.1 WiringTerminal Definition
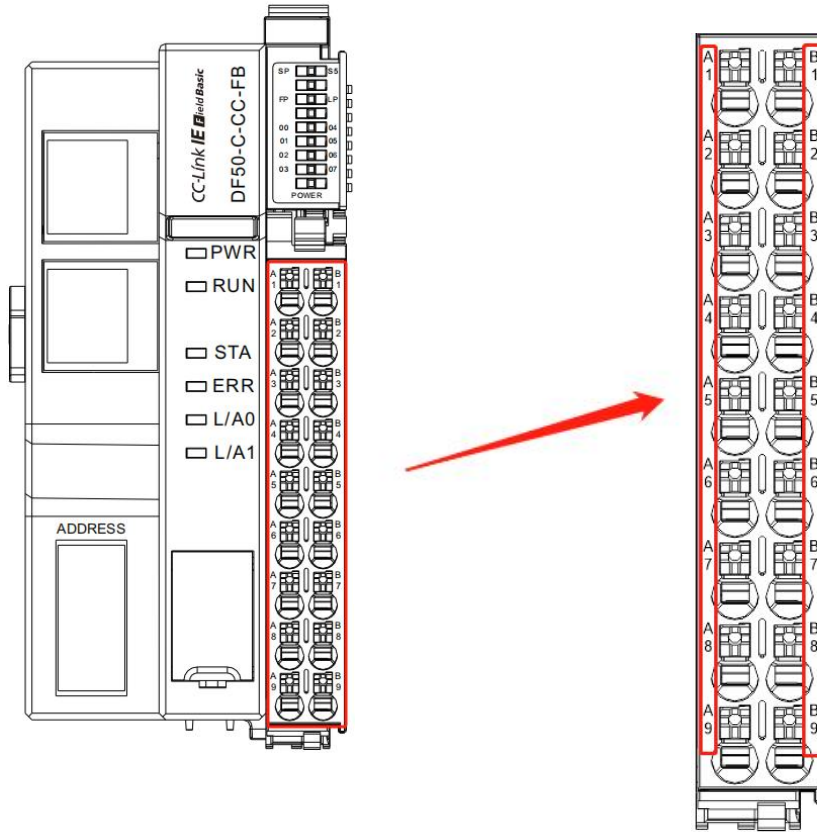
Terminal number	Signal	Terminal number	Signal	illustrate
A1	Sys-24V	B1	Sys-0V	System Power
A2	Field-24V	B2	Field-0V	Load power
A3	Field-24V	B3	Field-0V	supply
A4	PE	B4	PE	Safely
A5	DI0	B5	DI4	
A6	DI1	B6	DI5	
A7	DI2	B7	DI6	DI signal input
A8	DI3	B8	DI7	
A9	COM	B9	COM	Public

Note: It is recommended to use two isolated 24V power supplies to provide two power supplies for the coupler to achieve optimal anti-interference performance.

1.2.2 LED Indicatordefinition
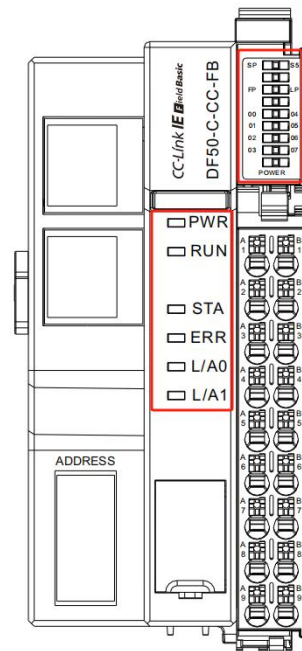
Indicator Lights	state	meaning
PWR	Green Bright	Power supply is operating normally
	Green Kill	Abnormal power supply operation
RUN	Green Bright	The coupler is operating normally
	Green Kill	Abnormal operation of the coupler
STA	Green Flash	The module is running normally
	Green Kill	Module operation abnormality
ERR	Red Bright	Communication abnormality between coupler and module
	Red Extinction	The communication between the coupler and the module is normal
L/A0	Green Bright	Network port 1 is connected successfully
	Green Flash	Network port 1 has data communication
L/A1	Green Bright	Network port 2 is connected successfully
	Green Flash	Network port 2 has data communication
FP	Green light is always on	Load power input is normal
	Green light off	Load power input abnormality
LP	Green light is always on	Load power output is normal
	Green light off	Load power output abnormality
SP	Green light on	System power input is normal
	Green light off	System power input abnormality
S5	Green light on	System power output is normal
	Green light off	System power output abnormality

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1.2.3 RJ45 interface
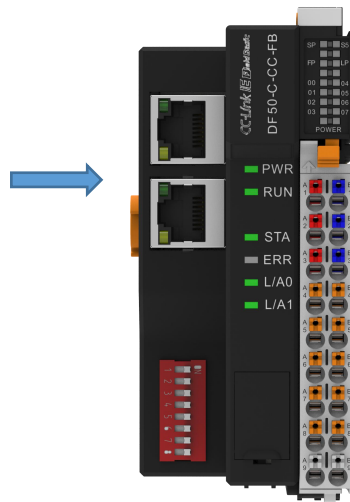
For establishing communication with the host computer, the dual RJ45 ports can easily create a linear structure without using any other network components.

1.2.4 DIP switch

➢ There are function definitions,

● 0:The IP address of the adapter is the address assigned by the IP address modification tool;

● 1~253:The first 3 bytes of the adapter's IP address are the data assigned by the IP address modification tool; the last byte is the dial value;

● 254: The IP address of the adapter is 192.168.3.254.
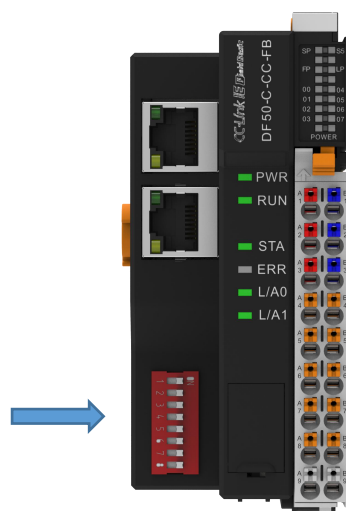
1.2.5 Wiring Diagram
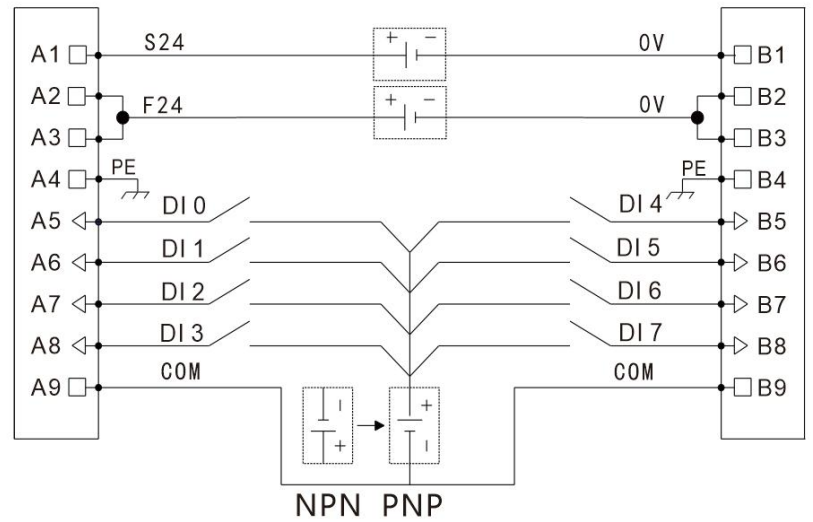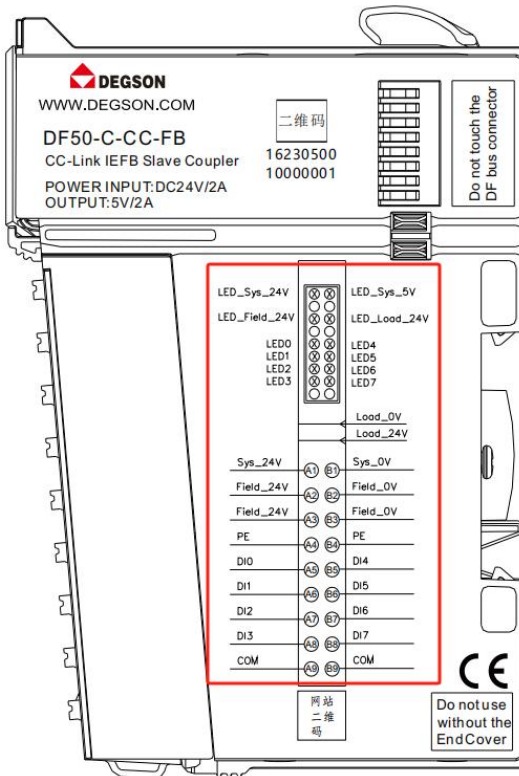
Note: COM is the common terminal, external 24V is used to realize NPN, external 0V is used to realize PNP.

1.2.6 Configurationinterface
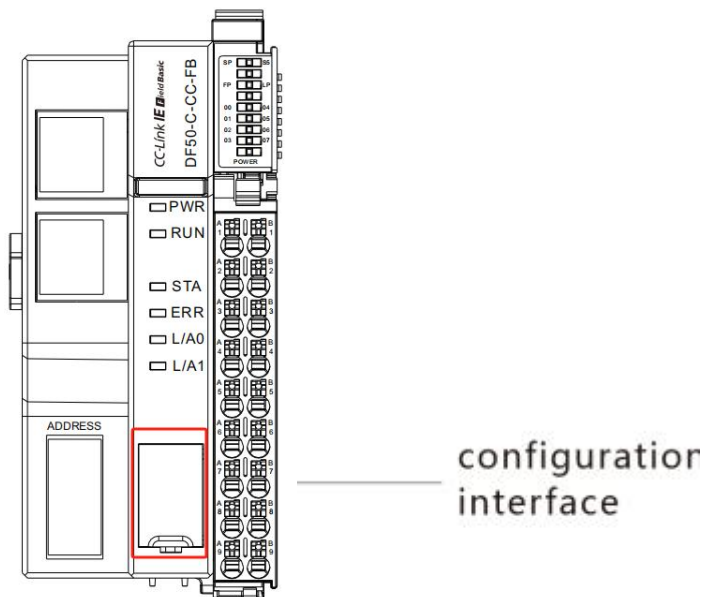
The configuration interface is set up and the cover can be opened to facilitate firmware upgrade of the adapter.

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Note:Non-professionals and authorized personnel are prohibited from using this interface to avoid firmware problems.

1.3. Process data definition
1.3.1 Diagnostic Data Area

➢ The diagnostic module contains 1 word of input data and 1 word of output data. The diagnostic module can display the fault information of the IO module.

Users can also obtain the software version of the IO module by outputting the setting command.

1. Display IO module fault information

Input data: 2 Byte		
Byte No.	illustrate	Remark
Byte 0	Location of the faulty module	0x01 represents the first IO module, 0x02 represents the second module, and so on.
Byte 1	Fault Codes	See fault code table 1 for details
Output data: 2 Byte		
Byte No.	illustrate	Remark
Byte 0	Clear Errors	Set 0x0001 to clear the current diagnostic input data. After clearing, the command data needs to be set to 0 again.
Byte 1		

Table 1: Fault code table

Fault Codes	Fault Description	Troubleshooting
0x10	PLC and adapter communicate normally	/
0xE1	Module power supply abnormality	Check the power cord connection
0xE2	Analog module calibration failure	Contact Supplier
0xE3	Module internal initialization exception	Contact Supplier
0xE8	Serial port module communication abnormality	Check signal line wiring

2、Get the software version of the IO module to be inserted later

Input data: 2 Byte		
Byte No.	illustrate	Remark
Byte 0	IO module software version	0x11 means version V11, and so on.
Byte 1	Reserve	/
Output data: 2 Byte		
Byte No.	illustrate	Remark
Byte 0	Get module software	Setting 0x101 can obtain the software version of the

Byte 1	version command output	first IO module, setting 0x102 can obtain the software version of the second IO module, and so on.

1.3.2.AdapterDigitalInput: Adapter 8-channel digital input display.

	Input data: 1 Byte							
Byte 0	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	DI 07	DI 06	DI 05	DI 04	DI 03	DI 02	DI 01	DI 00

1.4. Parameter settings

1.4.1.Adapter IP address parameter settings

1.4.1.1 Setting the last byte of the IP address via the DIP switch

➢ Calculation of dial value:As shown in Figure A, the DIP switch has 8 bits, bit 1 to bit 8, each bit represents a value.

The positions represent 1, 2, 4, 8, 16, 32, 64, and 128 in sequence. The value represented by the bits turned to ON is added together to get the dial value. Address 11 is: 1 (bit 1) + 2 (bit 2) + 8 (bit 4) = 11, and address 30 is: 2 (bit 2) + 4 (bit 3) + 8 (bit 4) + 16 (bit 5) = 30; turning all the bits down represents 0.
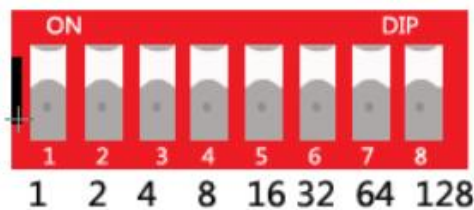
Figure A DIP switch

➢ When the IP address is set by the DIP switch from the factory default

● The default IP address of the adapter is 192.168.3.2 (when the dial value is 0). If the user modifies the dial value and the adapter

After the device is powered on again, the IP address is 192.168.3.xxx (xxx is the DIP switch value, ranging from 1 to 253).

➢ fromThe IP address has been set by the host computerstateDown,When setting the IP address using the DIP switch

● The IP address uses the high 3 bytes of the IP address set by the host computer, and the low 1 byte is the setting value of the DIP switch. For example,

If the host computer sets it to 172.10.0.12 and then changes the setting of the dip switch, the IP address becomes 172.10.0.xxx, where xxx is the setting value of the dip switch (1 to 253).

1.4.1.2Modify the IP address through the Conf_TestTool_ToMaster.exe tool

➢ After the hardware connection is completed, power on and set the computer IP address of the installation tool to the same network segment as the module IP. (For example, the module defaults to

The factory IP address is 192.168.3.2, the computer IP can be changed to 192.168.3.201）

➢ Open Conf_TestTool_ToMaster.exe,like"Step 1"Shownchoose"Debug Mode";
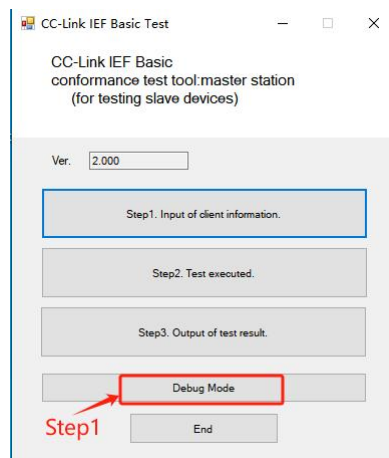
➢ As shown in Step 2, select the correct computer network interface;

➢ Click as shown in Step 3"Detect Connected Device";

➢ Click the required record as shown in Step 4"serverMacAddr"The address in will be used when modifying the IP address below;
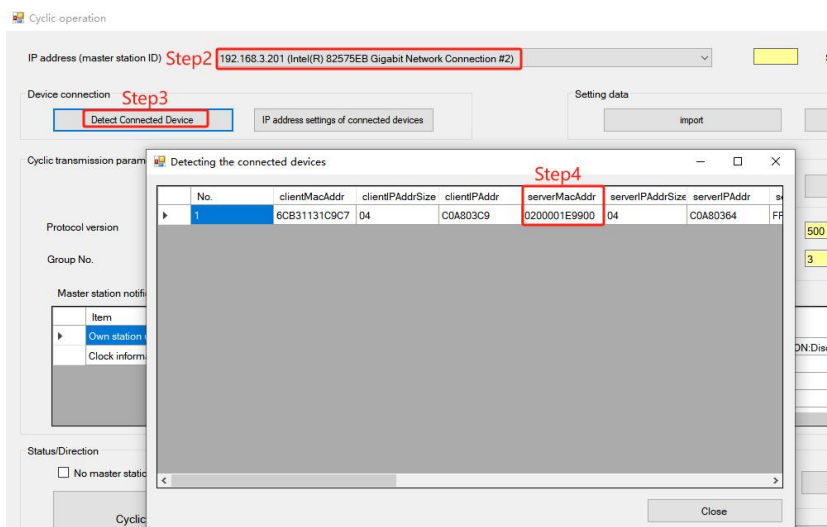
➢ As shown in Step 5, click"IP address settings of connected devices"

➢ As shown in Step 6, the recorded"serverMacAddr"Fill in the MAC address in"Slave station MAC address"middle;

➢ As shown in Step 7, the IP address to be modified is**"192.168.3.100"**Fill in"IP address to be set for the slave station"Inside;

➢ As shown in Step 8, click Execute;

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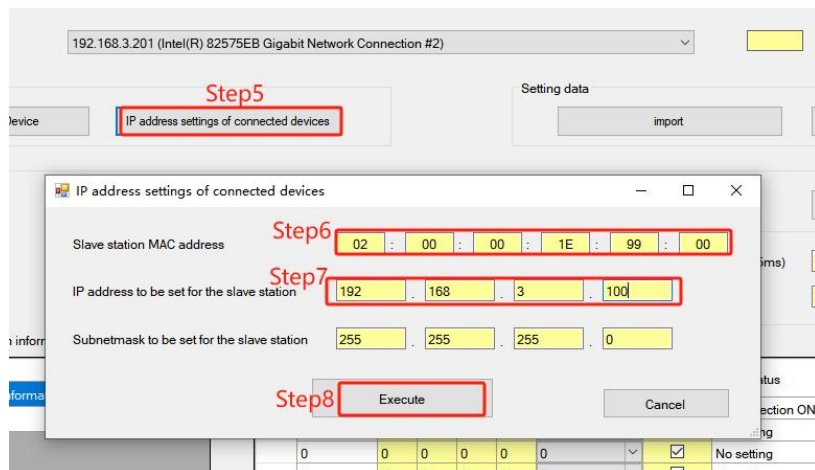
➢ As shown in Step 9, the IP address is modified successfully and can be reconnected. Click"OK", complete the IP modification.
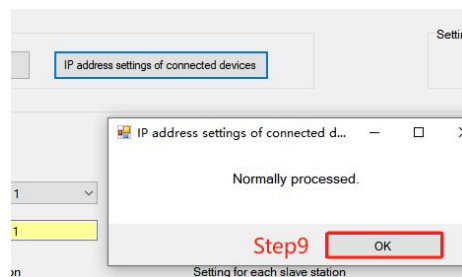
➢ If the user needs to modifyadapterThe network segment of the IP address, such as changing the IP address to "192.168.4.100",Repeat as shown

Steps from Step5 to Step8.
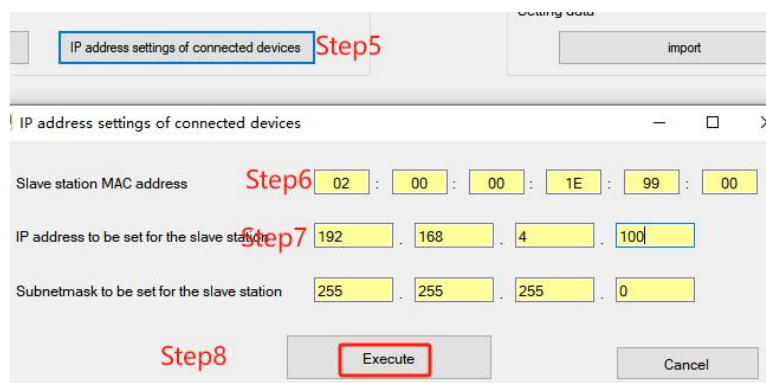
➢ The execution result is shown in Step 9. It fails because the software can no longer communicate with the adapter after the adapter changes the network segment.

As a result, the modification has actually been successful.

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> Change the computer network IP to 192.168.4.201, re-detect the adapter, and verify that the adapter IP address has been successfully modified..
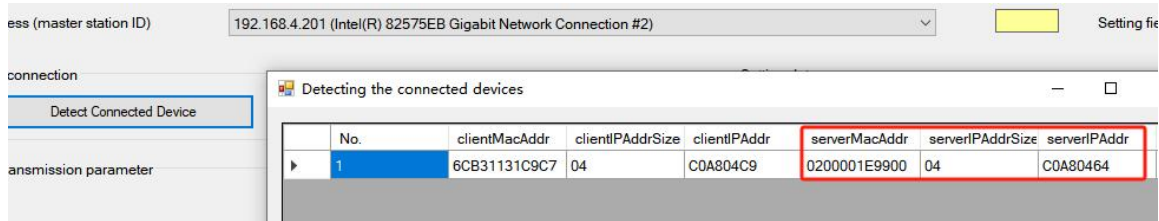
1.4.1.3Adapter IP address parametersReset settings

> If you forget or lose your IP address or encounter other abnormal situations during use,Set the adapter's dip switch to**"254",**

adapterIP addressAutomatically set to**"192.168.3.254"**,The user can scan the adapter through the IP address and then perform subsequent operations.

1.4.2. Module parameter setting function

1.4.2.1 Clear/Hold Function

> The clear/hold function is for modules with outputs. This function can configure the module output action when the bus is in abnormal state.

● Clear output: When the communication is disconnected, the module output channel automatically clears the output.

● Keep output: When the communication is disconnected, the module output channel keeps outputting.

For configuration method, refer to "Chapter 4, Section 2.1.5" .

1.4.2.2 DF50-M-16DI-P/N module input filter time

> Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated.The digital input filter is currently configured by default to 3ms, which can filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

For configuration method, refer to "Chapter 4, Section 2.1.5" .

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1.4.2.3 DF50-M-32DI-P/N module input filter time

➢ Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated.The digital input filter is currently configured by default to 3ms, which can filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

For configuration method, refer to "Chapter 4, Section 2.1.5**〞.**

1.4.2.4 DF50-M-16DI-16DO-P module input filter time

➢ Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated.The digital input filter is currently configured by default to 3ms, which can filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

For configuration method, refer to "Chapter 4, Section 2.1.5**〞.**

1.4.2.5 F50-M-16DI-16DO-N module input filter time

➢ Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated.The digital input filter is currently configured by default to 3ms, which can filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

For configuration method, refer to "Chapter 4, Section 2.1.5**〞.**

1.4.2.6 DF50-M-4AI-UI-6 module parameter configuration

➢ DF50-M-4AI-UI-6 is a 4-channel voltage or current input module. Users can set each channel of DF50-M-4AI-UI-6 as needed.

Channel range and sampling frequency, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.7 DF50-M-8AI-U-4 module parameter configuration

➢ DF50-M-8AI-U-4 is an 8-channel voltage input module. Users can set the voltage level of each channel of DF50-M-8AI-U-4 as needed.

Program range and sampling frequency, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.8 DF50-M-8AI-I-5 module parameter configuration

➢ DF50-M-8AI-I-5 is an 8-channel current input module. Users can set the current of each channel of DF50-M-8AI-I-5 as needed.

Program range and sampling frequency, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.9 DF50-M-4AO-UI-6 module parameter configuration

➢ DF50-M-4AO-UI-6 is a 4-channel voltage or current output module. Users can set each channel of DF50-M-4AO-UI-6 according to their needs.

Channel range, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.10 DF50-M-8AO-U-4 module parameter configuration

➢ DF50-M-8AO-U-4 is an 8-channel voltage output module. Users can set each channel of DF50-M-8AO-U-4 as needed.

Measuring range, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.11 DF50-M-8AO-I-5 module parameter configuration

➢ DF50-M-8AO-I-5 is an 8-channel current output module. Users can set each channel of DF50-M-8AO-I-5 according to their needs.

Channel range, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.12 DF50-M-4RTD-PT module parameter configuration

➢ DF50-M-4RTD-PT is a 4-channel thermal resistor input module. Users can set the DF50-M-4RTD-PT module according to their needs.

The type and sampling frequency of the connected sensor, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.13 DF50-M-8TC module parameter configuration

➢ DF50-M-8TC is an 8-channel thermocouple input module. Users can set the DF50-M-8TC module as

needed.

The type and sampling frequency of the connected sensor, for specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.14 DF50-M-2CNT-PIL-24 Module parameter configuration

➢ DF50-M-2CNT-PIL-24 is a 2-channel 24V encoder pulse counting module. Users can set the DF50-M-2CNT-PIL-24 module signal type, DI signal function, signal A filter time, signal B filter time, direction logic, counting mode, comparison function, bus abnormal counting action, cycle upper limit, cycle lower limit according to their needs. For specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.15 DF50-M-2CNT-PIL-5. Module parameter configuration

➢ DF50-M-2CNT-PIL-5 is a 2-channel 5V encoder pulse counting module. Users can set the DF50-M-2CNT-PIL-5 module signal type, DI signal function, signal A filter time, signal B filter time, direction logic, counting mode, comparison function, bus abnormal counting action, cycle upper limit, cycle lower limit according to their needs. For specific configuration methods, please refer to "**Chapter 4, Section 2.1.5**".

1.4.2.16 DF50-M-1COM-232/485/422 module parameter configuration

Modify the parameters of DF50-M-1COM-232/485/422. This module contains 4 parts of parameters: "Port Configuration", "Free Mode Configuration", "Slave Mode Configuration" and "Master Mode Configuration". For specific configuration methods, refer to "**Chapter 4, Section 2.1.5**".

1.4.2.17 DF50-M-16D1-16DO-N module input filter time

➢ Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated. The digital input filter is currently configured by default to 3ms, which can filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

1.4.2.18 DF50-M-16D1-16DO-P module input filter time

➢ Digital input filtering prevents the program from responding to unexpected rapid changes in input signals, which may be caused by switch contact bouncing or

Electrical noise is generated. The digital input filter is currently configured by default to 3ms, which can

filter out noise within 3ms. Channels cannot be configured separately. The 3ms input filter time means that a single signal can only be detected if it changes from "0" to "1", or from "1" to "0" for 3ms, while a single high pulse or low pulse shorter than 3ms will not be detected.

1.5.Mechanical Installation
1.5.1Installsize

The installation dimensions are shown in the figure below, in mm:
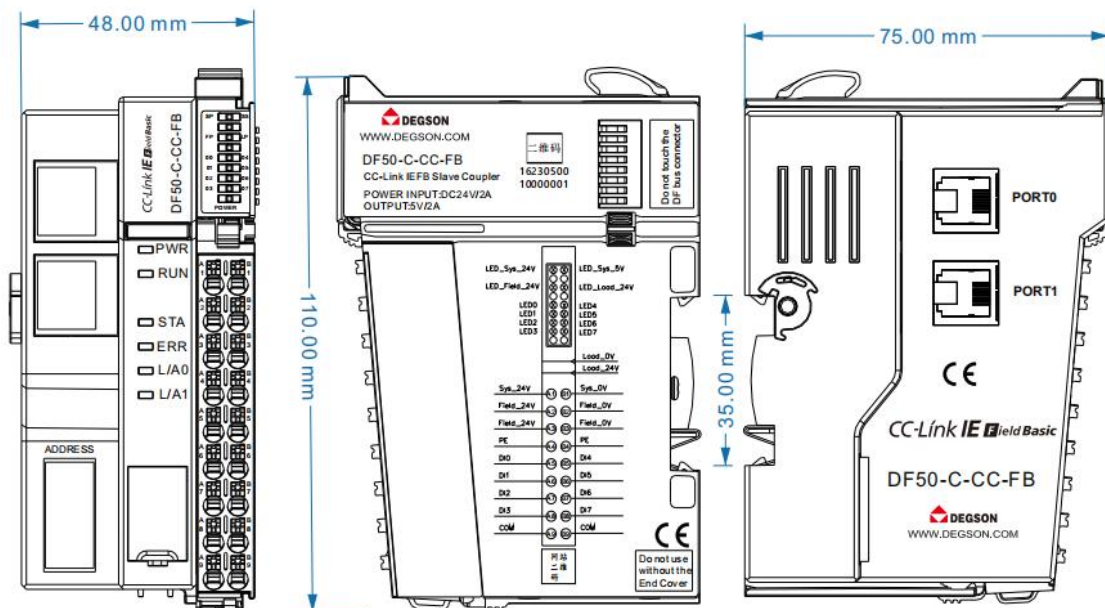
3.ExpandexhibitionI/O Module

Function	describe	model
Digital Module	Digital input, 16 inputs, PNP/NPN	DF50-M-16DI-P/N
Digital Module	Digital input,32Input, PNP/NPN	DF50-M-32DI-P/N
Digital Module	Digital output, 16 outputs, PNP	DF50-M-16DO-P
Digital Module	Digital output, 16 outputs, NPN	DF50-M-16DO-N
Digital Module	4DO Relay Output	DF50-M-4DO-R
Digital Module	4DO PNP output	DF50-M-4DO-P-2A
Digital Module	32DO PNP output, short circuit protection function	DF50-M-32DO-P
Digital Module	32DO NPN output, short circuit protection function	DF50-M-32DO-N
Digital Module	16DI+16DO PNP	DF50-M-16DI-16DO-P
Digital Module	16DI+16DO NPN	DF50-M-16DI-16DO-N
Analog Modules	Analog input, 4 channels, voltage and current type	DF50-M-4AI-UI-6
Analog Modules	Analog input, 8 channels, voltage type	DF50-M-8AI-U-4
Analog Modules	Analog input, 8 channels, current type	DF50-M-8AI-I-5
Analog Modules	Analog output, 4 channels, voltage and current type	DF50-M-4AO-UI-6
Analog Modules	Analog output, 8 channels, voltage type	DF50-M-8AO-U-4
Analog Modules	Analog output, 8 channels, current type	DF50-M-8AO-I-5
Temperature Module	Thermal resistance measurement, 4 channels	DF50-M-4RTD-PT
Temperature Module	Thermocouple measurement, 8 channels	DF50-M-8TC
Encoder pulse counting module	Pulse counting, encoder counting, 2 channels, 24V input	DF50-M-2CNT-PIL-24
Encoder pulse counting module	Pulse counting, encoder counting, 2 channels, 5V input	DF50-M-2CNT-PIL-5
Serial communication module	1 channel RS485, RS232 or RS422, support Modbus master-slave or transparent transmission mode	DF50-M-1COM-232/485/422

Voltage distribution module	24VDC voltage distribution, 16 channels	DF50-M-DC-U-0
Voltage distribution module	0VDC voltage distribution, 16 channels	DF50-M-DC-U-24

IO data allocation instructions

model	Uplink process data	Downlink process data
DF50-C-CC-FB	1 Word (RWr): Diagnostic input status word	1 Word (RWr):Diagnostic command output
DF50-M-16DI-P/N	16 bits(RX):16 channel input data	/
DF50-M-32DI-P/N	32 bits(RX):32 channel input data	
DF50-M-16DO-P	/	c
DF50-M-16DO-N	/	16 bits（RY）:16 channel output data
DF50-M-4DO-R		4 bits（RY）:4 channel input data
DF50-M-4DO-P-2A	4 bits(RX):4 channel input data	4 bits（RY）:4 channel input data
DF50-M-32DO-P	/	32 bits（RY）:32 channel output data
DF50-M-32DO-N	/	32 bits（RY）:32 channel output data
DF50-M-16DI-16DO-P	16 bits(RX):16 channel input data	16 bits（RY）:16 channel output data
DF50-M-16DI-16DO-N	16 bits(RX):16 channel input data	16 bits（RY）:16 channel output data
DF50-M-4AI-UI-6	4 words(RWr):4 channel input data	/
DF50-M-8AI-I-5	8 words(RWr):8 channel input data	/
DF50-M-8AI-U-4	8 words(RWr):8 channel input data	/
DF50-M-4AO-UI-6	/	4 words（RWw）:4 channel output data
DF50-M-8AO-U-4	/	8 words（RWw）:8 channel output data
DF50-M-8AO-I-5	/	8 words（RWw）:8 channel output data
DF50-M-4RTD-PT	4 words（RWr）:4 channel input data	/
DF50-M-8TC	8 words(RWr):8 channel input data	8 words（RWw）:8 channel output data
DF50-M-2CNT-PIL-24	10 words(RWr):2 channel input data	6 words（RWw）:2 channel output data
DF50-M-2CNT-PIL-5	10 words(RWr):2 channel input data	6 words（RWw）:2 channel output data
DF50-M-1COM-232/485/422	23 words(RWr):Serial port module input data	23 words（RWw）:Serial port module outputs data

1 16-channel digital input/24VDC/PNP&NPN (DF50-M-16DI-P/N)

➢ The digital input module can receive control signals from field devices (such as sensors, etc.).

➢ 16-channel digital input, PNP&NPN valid, common terminal conversion.

➢ Each input module is equipped with an anti-interference filter.

➢ Each input module has an LED indicator.

➢ The field level and the system level are isolated by optocouplers.

➢ Protection grade IP20.

1.1 Specifications

Technical Information		
Product Description		Digital Input Module, 16 Inputs, NPN & PNP, 24VDC
Number of channels		16
Signal Type		NPN & PNP
Signal range	"ON" signal voltage	Voltage difference > 11VDC (voltage difference with common input)
	"OFF" signal voltage	Voltage difference <5VDC (voltage difference with common input)
Hardware response time		200us/200us
Data size		16 bit
Connection Type		1-wire, Type 1/Type 3, according to IEC 61131-2
Reverse circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Filter time		0-40ms configurable
Input Impedance		>7.5kΩ
Input Action Display		When the input is in driving state, the input indicator light is on.
IO Mapping		Support bit-by-bit or word-by-word mapping
Power parameters		
System bus input power rated voltage		5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current		45mA
Terminal power supply (common terminal) input rated voltage	NPN signal type	24V
	PNP signal type	0V
Wiring parameters		
Connection technology: Input		PUSH-IN Terminal Blocks
Wire crimping area		0.2～1.5mm2/26～16AWG
Stripping length		8～10mm²
Installation		DIN-35 rail
Material parameters		
color		black
Housing Material		PC plastic, PA66
Conformance mark		CE
Environmental requirements		
Allowable ambient temperature (operating)		-25～60℃
Permissible ambient temperature (storage)		-40～85℃
Protection type		IP20
Pollution degree		2. Comply with IEC 61131-2 standard
Operating altitude		Temperature without derating: 0～2000m
Relative humidity (non-condensing)		5～95%RH
Vibration resistance		1g, in accordance with IEC 60068-2-6
Shock resistance		15g, compliant with IEC 60068-2-27
EMC anti-interference level		Compliant with IEC 61000-4
Corrosion resistance		Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity		10ppm
Permissible SO2 pollutant concentration at 75% relative humidity		25ppm

1.2 Hardware Interface
1.2.1 Terminal Block Definition
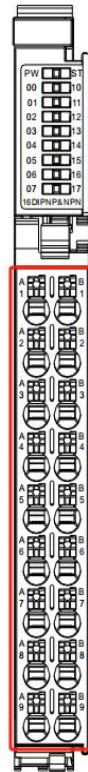
Terminal number	Signal	Terminal number	Signal	illustrate
A1	DI 0	B1	DI 10	DI signal input
A2	DI 1	B2	DI 11	
A3	DI 2	B3	DI 12	
A4	DI 3	B4	DI 13	
A5	DI 4	B5	DI 14	
A6	DI 5	B6	DI 15	
A7	DI 6	B7	DI 16	
A8	DI 7	B8	DI 17	
A9	COM	B9	COM	Public

l16-channel digital input/24VDC/PNP&NPN(DF50-M-16DI-P/N)

1.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off: The internal bus of the module is working abnormally
00～07,10～17	Green: Input signal is valid	
	Green off: Input signal is invalid	

l16-channel digital input/24VDC/PNP&NPN(DF50-M-16DI-P/N)

1.2.3 Wiring Diagram

Note: COM is the common terminal, external 24V realizes NPN; external 0V realizes PNP.

1.3 Process Data Definition

Bit No	Input Data							
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0
Byte 1	DO17	DO16	DO15	DO14	DO13	DO12	DO11	DO10

1.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
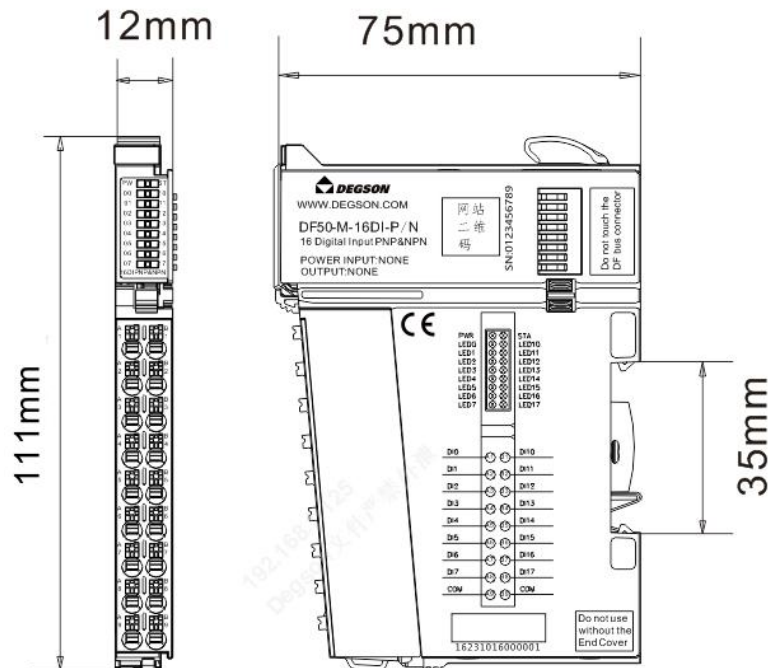
2 16-channel digital output/24VDC/PNP (DF50-M-16DO-P)

➢ 16-channel digital output, PNP high level is valid.

➢ Each output channel has an LED indicator.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.
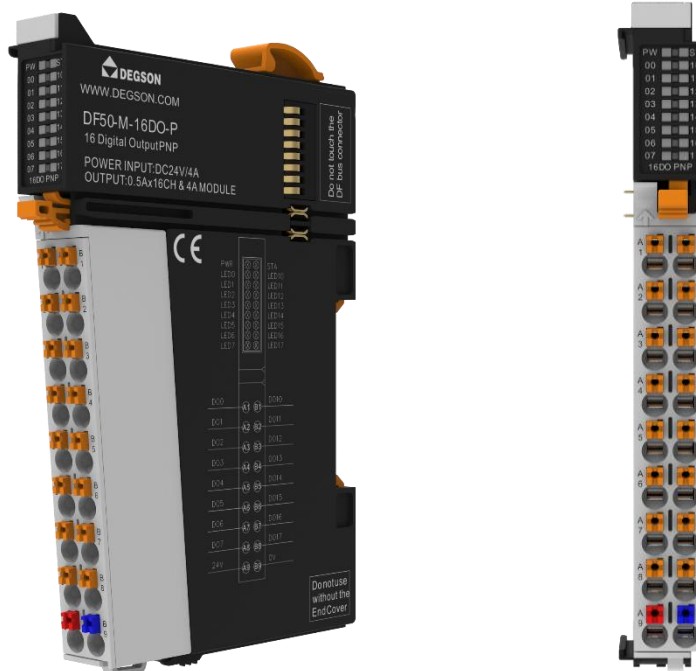
2.1 Specifications

Technical Information	
Product Description	Digital output module, 16 outputs,PNP, 24VDC
Number of channels	16
Signal Type	PNP
"OFF" signal voltage	High impedance
"ON" signal voltage	twenty fourV DC
Data size	16 bit
Connection Type	1-wire
Reverse circuit protection	Yes
Overcurrent protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	Yes
Switching frequency (resistive)	100Hz
Switching frequency (lamp)	10Hz
Switching frequency (inductive)	0.2Hz
Response time of protection circuit	< 100μs
Maximum output current per channel	500 mA
Leakage Current	Maximum value: 10uA
Hardware response time	100us/100us
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical value 135℃ Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type	Inductive (7.2W/point, 24W/module), Resistive (0.5A/point, 4A/module), Light (5W/point, 18W/module)
Output action display	When the output is in driving state, the indicator light is on.
Input derating	When working at 55℃, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10℃ when all output points are ON
IO Mapping	Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode	Clear to zero, keep current value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	100mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	8A
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard

Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

2.2 Hardware Interface
2.2.1wiringTerminal Definition

Terminal number	Signal	Terminal number	Signal	illustrate
A1	DO 00	B1	DO 10	
A2	DO 01	B2	DO 11	
A3	DO 02	B3	DO 12	
A4	DO 03	B4	DO 13	
A5	DO 04	B5	DO 14	DO signal output
A6	DO 05	B6	DO 15	
A7	DO 06	B7	DO 16	
A8	DO 07	B8	DO 17	
A9	24V	B9	0V	Terminal power input

16 channelsDigital inputInput/24VDC/PNP(DF50-M-16DO-P)

2.2.2 LED Indicatordefinition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
00～07,10～17	Green: Output signal is valid		
	Green off: Output signal is invalid		

2.2.3 Wiring Diagram
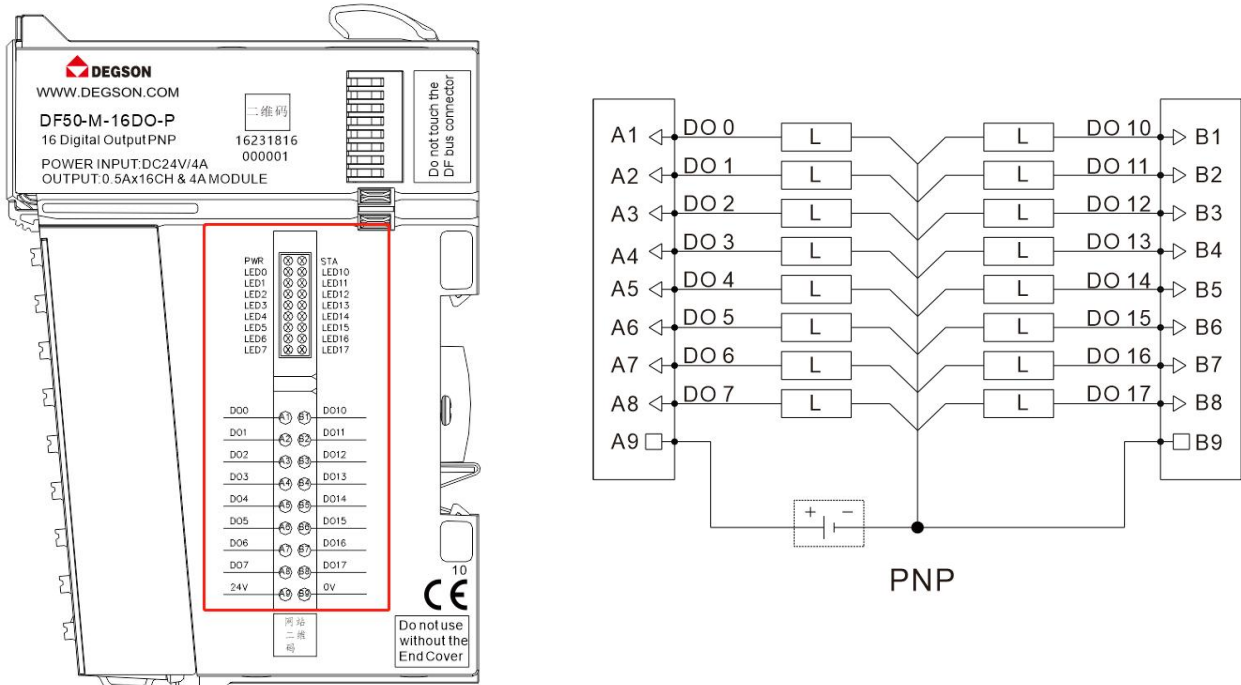
Note: A9, B9   The 24V power supply is provided externally.

2.3 Process data definition

Input Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0
Byte 1	DO17	DO16	DO15	DO14	DO13	DO12	DO11	DO10

2.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

16 channelsDigital inputInput/24VDC/PNP(DF50-M-16DO-P)
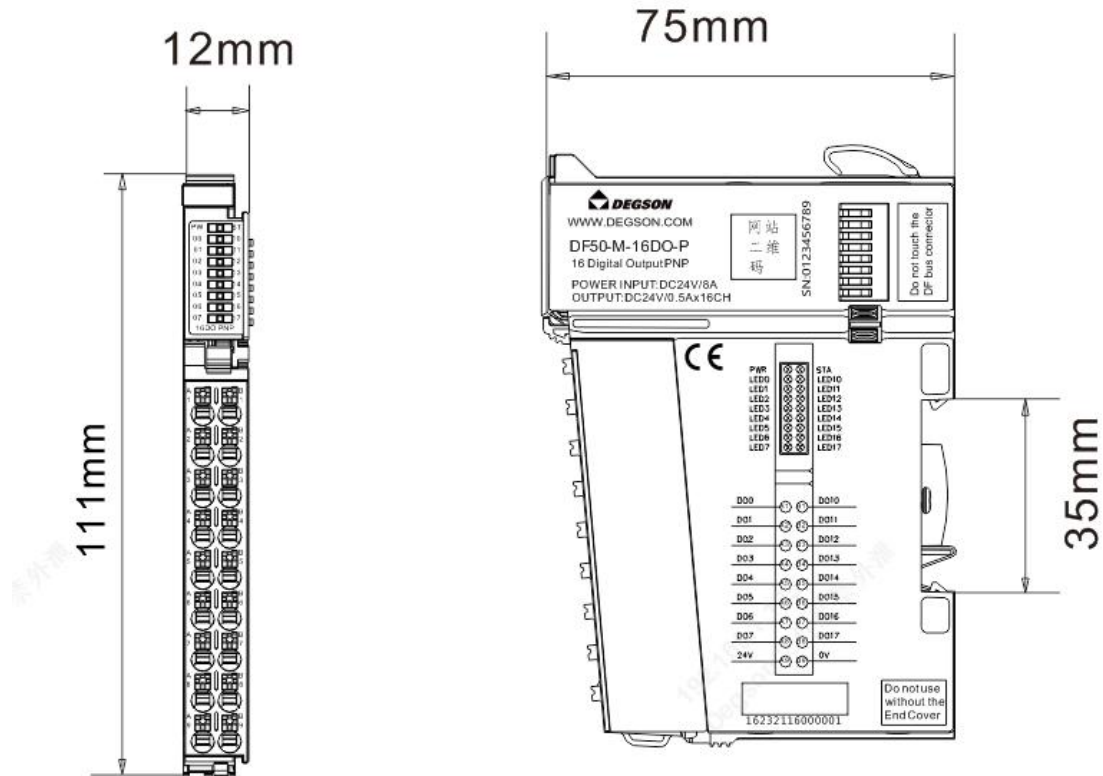
3 16-channel digital output/24VDC/NPN (DF50-M-16DO-N)

➢ 16-channel digital output, NPN low level is valid.

➢ Each output channel has an LED indicator.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.
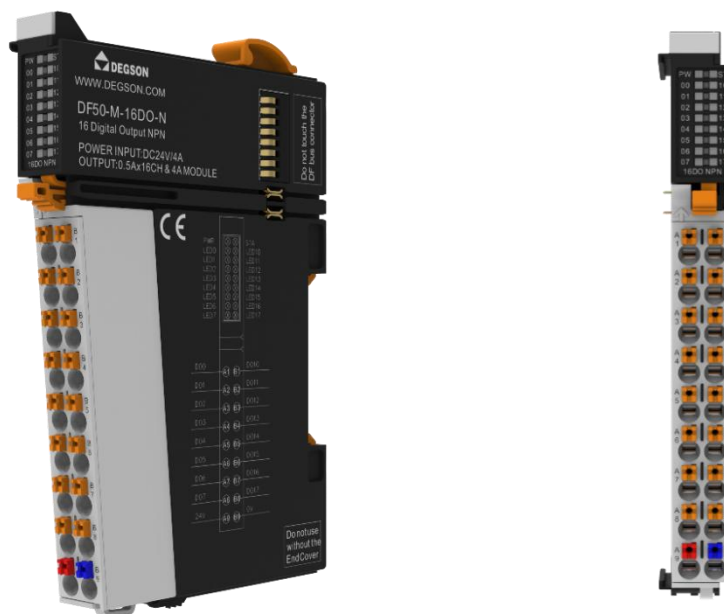
3.1 Specifications

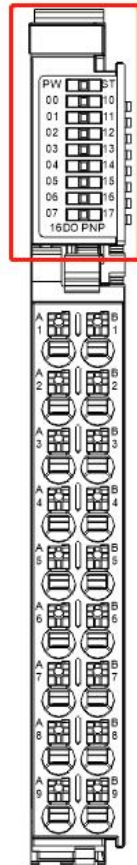| Technical Information	
Product Description	Digital output module, 16 outputs, NPN, 24VDC
Number of channels	16
Signal Type	NPN
"OFF" signal voltage	High impedance
"ON" signal voltage	0V DC
Data size	16 bit
Connection Type	1-wire
Reverse circuit protection	Yes
Overcurrent protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	Yes
Switching frequency (resistive)	100Hz
Switching frequency (lamp)	10Hz
Switching frequency (inductive)	0.2Hz
Response time of protection circuit	< 100μs
Maximum output current per channel	500 mA
Leakage Current	Maximum value: 10uA
Hardware response time	100us/100us
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical value 135℃ Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type	Inductive (7.2W/point, 24W/module), Resistive (0.5A/point, 4A/module), Light (5W/point, 18W/module)
Output action display	When the output is in driving state, the indicator light is on.
Input derating	When working at 55℃, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10℃ when all output points are ON
IO Mapping	Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode	Clear to zero, keep current value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	100mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	8A
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60℃
Permissible ambient temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard

Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

3.2 Hardware Interface

3.2.1 WiringTerminal Definition
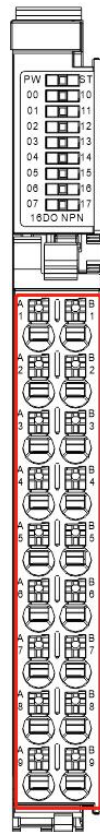
Terminal number	Signal	Terminal number	Signal	illustrate
A1	DO 00	B1	DO 10	DO signal output
A2	DO 01	B2	DO 11	
A3	DO 02	B3	DO 12	
A4	DO 03	B4	DO 13	
A5	DO 04	B5	DO 14	
A6	DO 05	B6	DO 15	
A7	DO 06	B7	DO 16	
A8	DO 07	B8	DO 17	
A9	24V	B9	0V	Terminal power input

16 channelsDigital output/24VDC/NPN

3.2.2 LED Indicatordefinition

Indicator Lights	meaning	
PW	Green:System bus power inputnormal	
	Green Kill:System bus power inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal
00～07,10～17	Green: Output signal is valid	
	Green off: Output signal is invalid	

3.2.3 Wiring Diagram
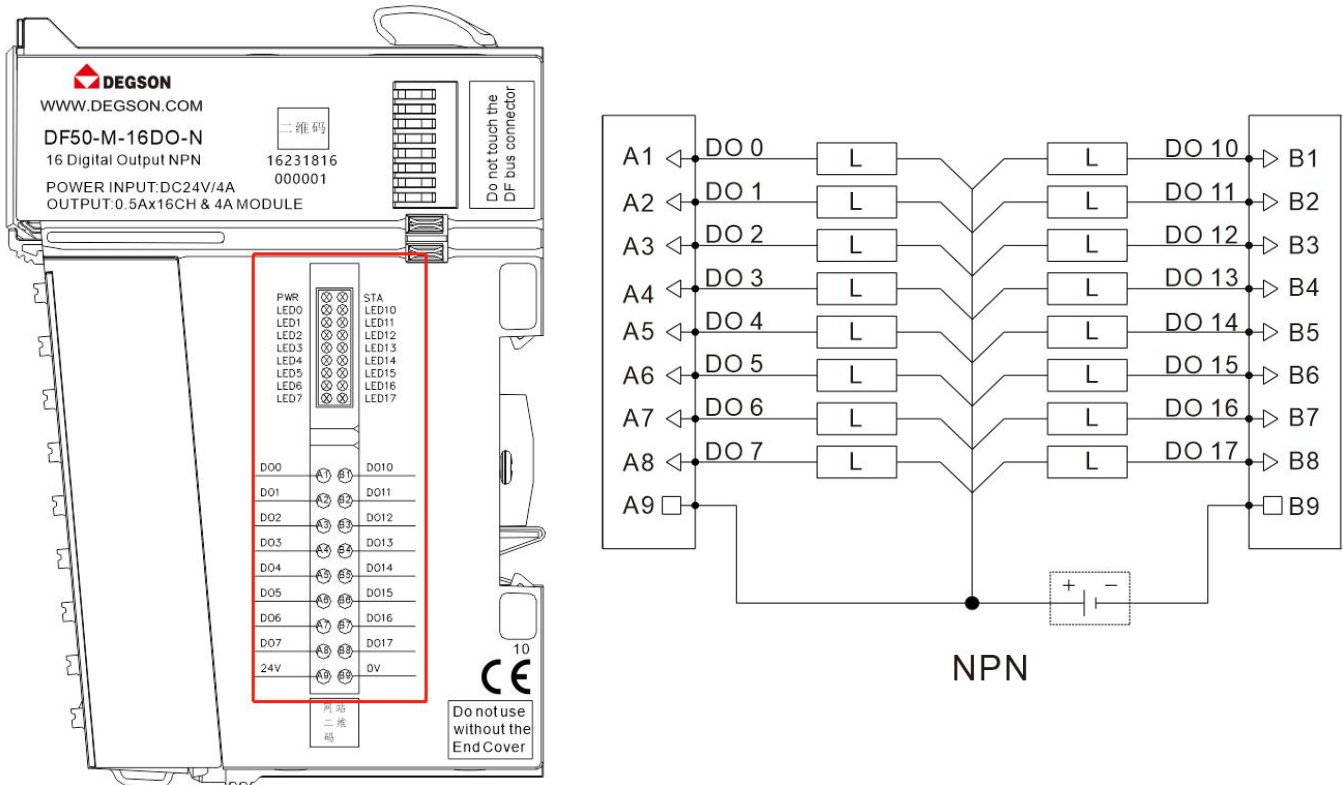
Note: A9, B9   The 24V power supply is provided externally.

3.3 Process data definition

Output Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0
Byte 1	DO17	DO16	DO15	DO14	DO13	DO12	DO11	DO10

3.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

4 4-channel analog input/voltage type/current type (DF50-M-4AI-UI-6)

➢ The analog input module can receive voltage and current standard signals.

➢ 4-channel analog input, voltage type, current type.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20

4Channel simulationQuantity Input/Voltage type/Current type

4.1 Specifications

Technical Information	
Product Description	Analog input module, 4 inputs, voltage & current
Number of channels	4
Signal Type	Voltage/current, single-ended signal
Resolution	16 Bit
Voltage measurement range	±10V, 0~10V, 2~-10V, ±5V, 0~5V, 1~5V
Voltage input impedance	>400KΩ
Voltage input accuracy (full temperature range)	0.2%
Voltage input limit	±15V
Voltage input diagnostics	2~10V, 1~5V support disconnection detection
Current measurement range	0~20mA, 4~20mA
Current acquisition impedance	100Ω
Current input accuracy (full temperature range)	0.2%
Current input limit	Instantaneous 30mA, average 24mA
Current input diagnostics	4~20mA supports disconnection detection
Isolation	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	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable,±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V, 0~20mA, 4~20mA
Filter parameter configuration	1000Hz~50Hz configurable
Input Action Display	When the input signal is valid, the input indicator flashes (software controlled)
IO process data size	4 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	30mA
Terminal power output rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power output rated current	0.5A/each power output channel
Wiring parameters	
Connection technology: Input	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm²
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

4Channel simulationQuantity Input/Voltage type/Current type

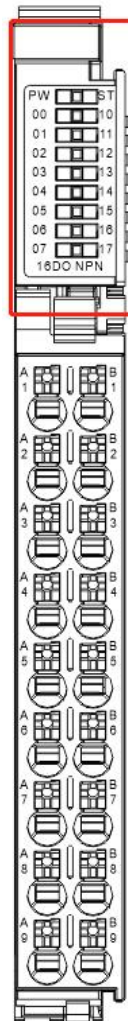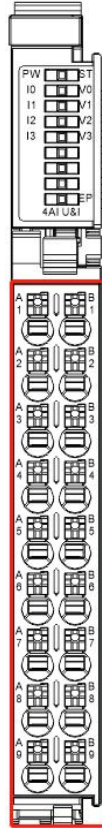| Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

4.2 Hardware Interface
4.2.1 WiringTerminal Definition

Terminal number	Signal	Terminal number	Signal	illustrate
A1	24Vo	B1	GND	Terminal power output
A2	I0+	B2	V0+	Current/voltage input channels
A3	24Vo	B3	GND	Terminal power output
A4	I1+	B4	V1+	Current/voltage input channels
A5	24Vo	B5	GND	Terminal power output
A6	I2+	B6	V2+	Current/voltage input channels
A7	24Vo	B7	GND	Terminal power output
A8	I3+	B8	V3+	Current/voltage input channels
A9	24V	B9	0V	Terminal power input

4Channel simulationQuantity Input/Voltage type/Current type

DEGSON

4.2.2 LED Indicatordefinition

Indicator Lights	meaning	
PW	Green:System bus power inputnormal	
	Green Kill:System bus power inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal
EP	Green: The terminal power input is normal	
	Green off: Terminal power input abnormality	
I0～I3,V0～V3	Green flash: input signal is valid	
	Green off: Input signal is invalid	

4Channel simulationQuantity Input/Voltage type/Current type

4.2.3 Wiring Diagram

Note: A9, B9 24V power supply is provided externally.

4.3 Process data definition

Input data:4Words	
Word No.	meaning
Word0	Channel 0 input data
Word1	aisle1 LoseInput
Word2	aisle2Input Data
Word3	aisle3Input Data

Process data definition description:

Process data description (voltage type)					
Signal range	Voltage value	Decimal data	Hexadecimal data	Scope	Conversion relationship
±10V	>11.76V	32767	0x7FFF	Overflow	
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	D = 27648 x U / 10 U = D x 10 / 27648
	5V	13824	0x3600		
	0V	0	0x0000		
	-5V	-13824	0xCA00		
	-10V	-27648	0x9400		
	-11.76V	-32511	0x8100	Lower limit	
	<-11.76V	-32768	0x8000	Underflow	
0-10V	>11.76V	32767	0x7FFF	Overflow	D = 27648 x U / 10 U = D x 10 / 27648
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	5V	13824	0x3600		
	0V	0	0x0000		
2-10V	>11.41V	32767	0x7FFF	Overflow	D = 27648 x (U – 2) / 8 U = D x 8 / 27648 + 2
	11.41V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	

4Channel simulationQuantity Input/Voltage type/Current type

Signal range	Voltage	Decimal data	Hexadecimal data	scope	Conversion relationship
	6V	13824	0x3600		
	2V	0	0x0000		
	0.59 V	-4864	0xED00	Lower limit	
	<0.59 V	-32768	0x8000	Underflow	
±5V	>5.88V	32767	0x7FFF	Overflow	D = 27648 x U / 5
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		
	0V	0	0x0000		
	-2.5V	-13824	0xCA00		U = D x 5 / 27648
	-5V	-27648	0x9400		
	-5.88V	-32511	0x8100	Lower limit	
	<-5.88V	-32768	0x8000	Underflow	
0-5V	>5.88V	32767	0x7FFF	Overflow	D = 27648 x U / 5
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		U = D x 5 / 27648
	0V	0	0x0000		
1-5V	>5.7V	32767	0x7FFF	Overflow	
	5.7V	32511	0x7EFF	Upper limit	D = 27648 x (U – 1) / 4
	5V	27648	0x6C00	Normal range	
	3V	13824	0x3600		
	1V	0	0x0000		U = D x 4 / 27648 + 1
	0.3V	-4864	0xED00	Lower limit	
	<0.3V	-32768	0x8000	Underflow	

Process data description (current type)					
Signal range	Current (I)	Decimal data	Hexadecimal data	scope	Conversion relationship
0 - 20 mA	>23.52 mA	32767	0x7FFF	Overflow	
	23.52 mA	32511	0x7EFF	Upper limit	D = 27648 x I / 20
	20 mA	27648	0x6C00	Normal range	
	10 mA	13824	0x3600		I = D x 20 / 27648
	0 mA	0	0		
4 – 20 mA	>22.81 mA	32767	0x7FFF	Overflow	
	22.81 mA	32511	0x7EFF	Upper limit	
	20 mA	27648	0x6C00	Normal range	D = 27648 x (I – 4) / 16
	12 mA	13824	0x3600		I = D x 16 / 27648 + 4
	4 mA	0	0		
	1.19 mA	-4864	0xED00	Lower limit	
	<1.19 mA	-32768	0x8000	Underflow	

4Channel simulationQuantity Input/Voltage type/Current type

4.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

4Channel simulationQuantity Input/Voltage type/Current type
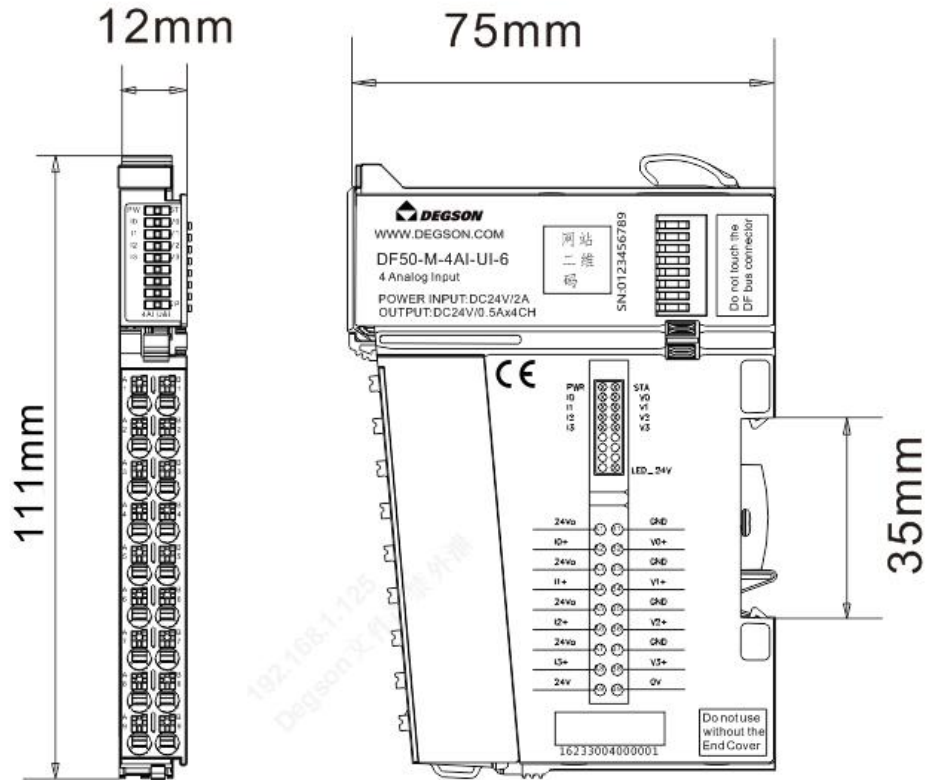
5 8-channel analog input/current type (DF50-M-8AI-I-5)

➢ The analog input module can receive 0~20mA and 4~20mA standard signals.

➢ 8-channel analog input, current type.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20

8Channel simulationQuantity Input/Current Type

5.1 Specifications

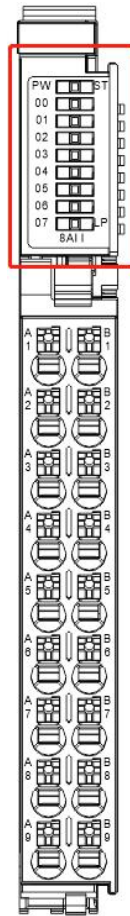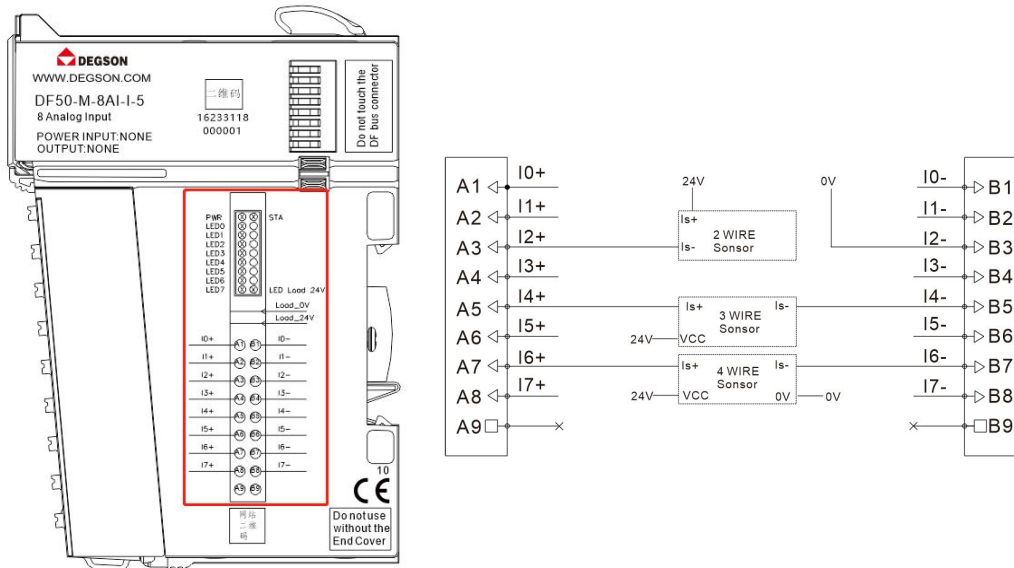| Technical Information	
Product Description	Analog input module, 8 inputs, current type
Number of channels	8
Signal Type	Current, single-ended input
Resolution	16 Bit
Current measurement range	0~20mA, 4~20mA
Current acquisition impedance	100Ω
Current input accuracy (full temperature range)	0.2%
Current input limit	Instantaneous 30mA, average 24mA
Current input diagnostics	4~20mA supports disconnection detection
Isolation	The interface channels are not isolated, the power supply is isolated
Independent channel enable configuration	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable, 0~20mA, 4~20mA
Filter parameter configuration	1000Hz~50Hz configurable
Input Action Display	When the input signal is valid, the input indicator flashes (software
IO process data size	8 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Internal load power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Internal load power input rated current	20mA
Wiring parameters	
Connection technology: Input	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm²
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

5.2 Hardware Interface
5.2.1 WiringTerminal Definition

8Channel simulationQuantity Input/Current Type
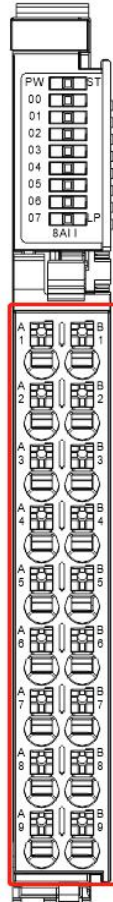
TerminalsSerial number	Signal	TerminalsSerial number	Signal	illustrate
A1	I0+	B1	I0-	Current input channel 1
A2	I1+	B2	I1-	Current input channel2
A3	I2+	B3	I2-	Current input channel3
A4	I3+	B4	I3-	Current input channel4
A5	I4+	B5	I4-	Current input channel5
A6	I5+	B6	I5-	Current input channel6
A7	I6+	B7	I6-	Current input channel7
A8	I7+	B8	I7-	Current input channel8
A9	/	B9	/	/

8Channel simulationQuantity Input/Current Type

5.2.2 LED Indicatordefinition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the internal load power input is abnormal.	
LP	Green: Internal load power input is normal		
	Green off: Internal load power input is abnormal		
00～07	Green flash: input signal is valid		
	Green off: Input signal is invalid		

8Channel simulationQuantity Input/Current Type

5.2.3 Wiring Diagram

5.3 Process data definition

Input data:8Words	
Word No.	meaning
Word0	Channel 0 input data
Word1	Channel 1 input data
Word2	Channel 2 input data
Word3	Channel 3 input data
Word4	aisle4Input Data
Word5	aisle5Input Data
Word6	aisle6Input Data
Word7	aisle7Input Data

Process data definition description:

Process data description (current type)					
Signal range	Current	Decimal	Hexadecimal	scope	Conversion relationship
0 ~ 20 mA	>23.52	32767	0x7FFF	Overflow	D = 27648 x I / 20
	23.52 mA	32511	0x7EFF	Upper	
	20 mA	27648	0x6C00	Normal	I = D x 20 / 27648
	10 mA	13824	0x3600	range	
	0 mA	0	0		
4 ~ 20 mA	>22.81	32767	0x7FFF	Overflow	D = 27648 x (I – 4) / 16
	22.81 mA	32511	0x7EFF	Upper	
	20 mA	27648	0x6C00	Normal	
	12 mA	13824	0x3600	range	I = D x 16 / 27648 + 4
	4 mA	0	0		
	1.19 mA	-4864	0xED00	Lower	
	<1.19 mA	-32768	0x8000	Underflo	

8Channel simulationQuantity Input/Current Type

5.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

8Channel simulationQuantity Input/Current Type
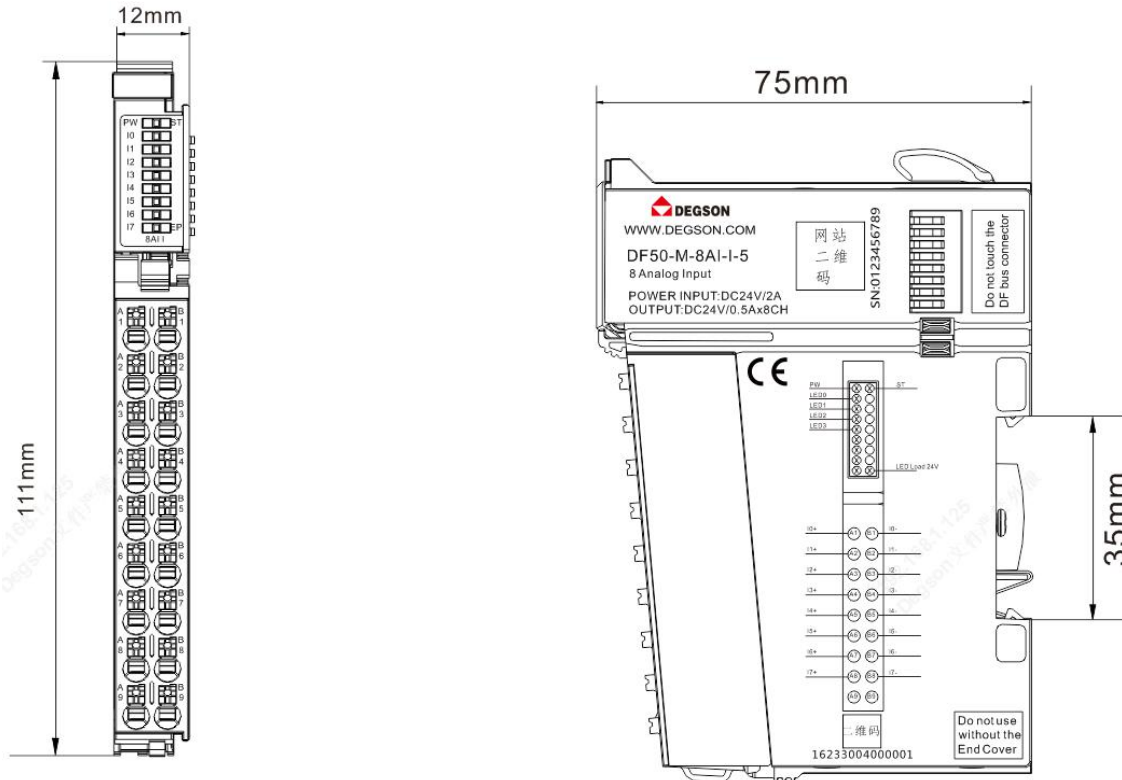
6 8-channel analog input/voltage type (DF50-M-8AI-U-4)

➢ The analog input module can receive ±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V standard signals.

➢ 8-channel analog input, voltage type.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20
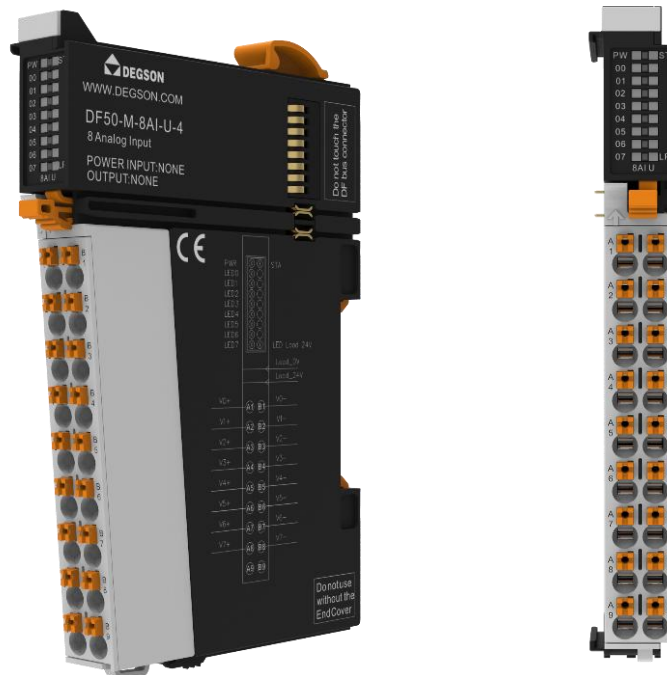
6.1 Specifications

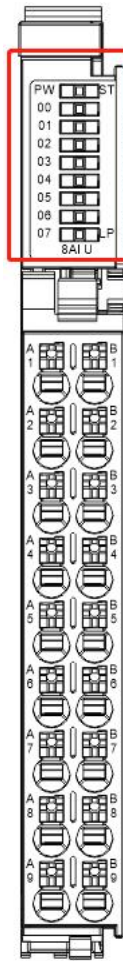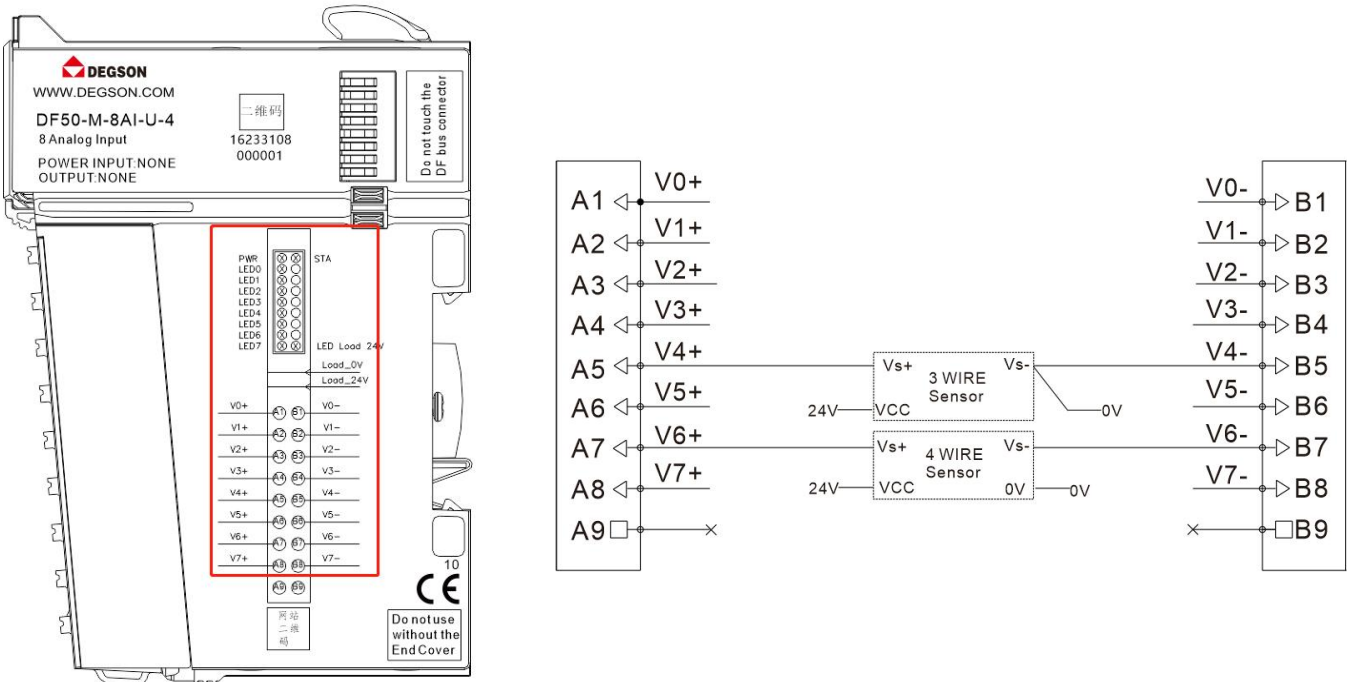| Technical Information	
Product Description	Analog input module, 8 inputs, voltage type
Number of channels	8
Signal Type	Voltage, single-ended input
Resolution	16 Bit
Voltage measurement range	±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V
Input Impedance	>400KΩ
Voltage input accuracy (full temperature range)	0.2%
Voltage input limit	±15V
Voltage input diagnostics	2~10V, 1~5V support disconnection detection
Isolation	The interface channels are not isolated, the power supply is
Independent channel enable configuration	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable,±10V,0~10V, 2~10V, ±5V, 0~5V, 1~5V
Filter parameter configuration	1000Hz~50Hz configurable
Input Action Display	When the input signal is valid, the input indicator flashes
IO process data size	8Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	33mA
Internal load power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Internal load power input rated current	42mA
Wiring parameters	
Connection technology: input/output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm/0.31~0.35inches
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Installation location	Any
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

6.2 Hardware Interface
6.2.1 WiringTerminal Definition
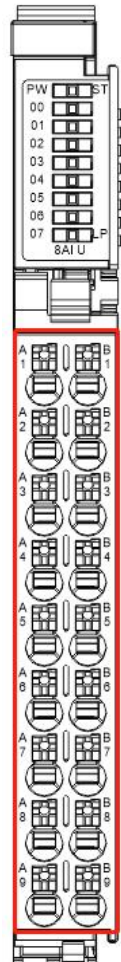
Terminal number	Signal	Terminal number	Signal	illustrate
A1	V0+	B1	V0-	Voltage input channel 0
A2	V1+	B2	V1-	Voltage input channel 1
A3	V2+	B3	V2-	Voltage input channel 2
A4	V3+	B4	V3-	Voltage input channel 3
A5	V4+	B5	V4-	Voltage input channel 4
A6	V5+	B6	V5-	Voltage input channel 5
A7	V6+	B7	V6-	Voltage input channel 6
A8	V7+	B8	V7-	Voltage input channel 7
A9	/	B9	/	/

8Channel analog input/voltage type

6.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus power inputnormal	
	Green Kill:System bus power inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally or the internal load power input is abnormal.
LP	Green: Internal load power input is normal	
	Green off: Internal load power input is abnormal	
00～07	Green flash: input signal is valid	
	Green off: Input signal is invalid	

8Channel analog input/voltage type

6.2.3 Wiring Diagram

6.3 Process data definition

Input data:8 Words	
Word No.	meaning
Word0	Channel 0 input data
Word1	Channel 1 input data
Word2	Channel 2 input data
Word3	Channel 3 input data
Word4	aisle4Input Data
Word5	aisle5Input Data
Word6	aisle6Input Data
Word7	aisle7Input Data

Process data definition description:

Process data description (voltage type)					
Signal range	Voltage value	Decimal data	Hexadecimal data	Scope	Conversion relationship
±10V	>11.76V	32767	0x7FFF	Overflow	
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	D = 27648 x U / 10
	5V	13824	0x3600		
	0V	0	0x0000		
	-5V	-13824	0xCA00		U = D x 10 / 27648
	-10V	-27648	0x9400		
	-11.76V	-32511	0x8100	Lower limit	
	<-11.76V	-32768	0x8000	Underflow	
0~10V	>11.76V	32767	0x7FFF	Overflow	D = 27648 x U / 10
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	U = D x 10 / 27648

8Channel analog input/voltage type

| Range	Voltage	Decimal	Hex	Status	Formula
	5V	13824	0x3600		
	0V	0	0x0000		
2~10V	>11.41V	32767	0x7FFF	Overflow	
	11.41V	32511	0x7EFF	Upper limit	$D = 27648 \times (U - 2) / 8$
	10V	27648	0x6C00	Normal range	
	6V	13824	0x3600		
	2V	0	0x0000		$U = D \times 8 / 27648 + 2$
	0.59 V	-4864	0xED00	Lower limit	
	<0.59 V	-32768	0x8000	Underflow	
±5V	>5.88V	32767	0x7FFF	Overflow	
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	$D = 27648 \times U / 5$
	2.5V	13824	0x3600		
	0V	0	0x0000		
	-2.5V	-13824	0xCA00		$U = D \times 5 / 27648$
	-5V	-27648	0x9400		
	-5.88V	-32511	0x8100	Lower limit	
	<-5.88V	-32768	0x8000	Underflow	
0~5V	>5.88V	32767	0x7FFF	Overflow	$D = 27648 \times U / 5$
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	$U = D \times 5 / 27648$
	2.5V	13824	0x3600		
	0V	0	0x0000		
1-5V	>5.7V	32767	0x7FFF	Overflow	
	5.7V	32511	0x7EFF	Upper limit	$D = 27648 \times (U - 1) / 4$
	5V	27648	0x6C00	Normal range	
	3V	13824	0x3600		
	1V	0	0x0000		$U = D \times 4 / 27648 + 1$
	0.3V	-4864	0xED00	Lower limit	
	<0.3V	-32768	0x8000	Underflow	

8Channel analog input/voltage type

6.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

8Channel analog input/voltage type

7 4-channel analog output/voltage type/current type (DF50-M-4AO-UI-6)

- ➢ The analog output module can output voltage and current standard signals.

- ➢ 4-channel analog output, voltage type, current type.

- ➢ The two LED indicators indicate that the module is operating normally and communicating normally.

- ➢ Magnetic isolation between the field level and the system level.

- ➢ Transmitted in 16-bit resolution.

- ➢ Protection grade IP20

8Channel simulationVolumeOutput/voltage type
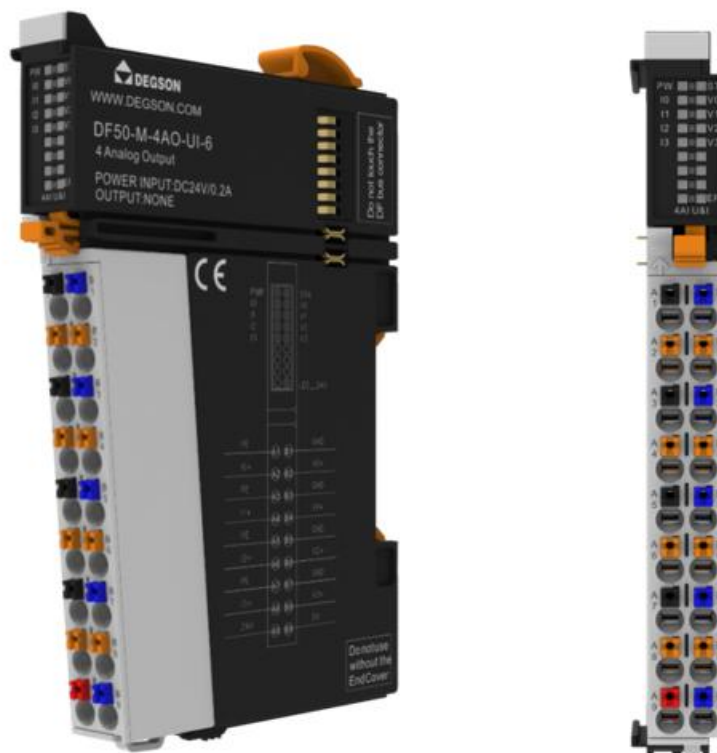
7.1 Specifications

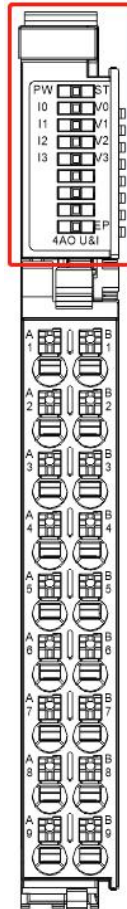| Technical Information	
Product Description	Analog output module, 4 outputs, voltage & current
Number of channels	4
Signal Type	Voltage/current, single-ended signal
Resolution	16 Bit
Voltage output range	±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V
Voltage output load	>1KΩ
Voltage output accuracy	±0.1%
Current output range	0~20mA, 4~20mA
Current output load	<600Ω
Current output accuracy	±0.1%
Isolation	The interface channels are not isolated, the power supply is
Independent channel enable configuration	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable,±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V, 0~20mA, 4~20mA
Output status configuration after shutdown	Clear to zero, keep current value
Stop Mode	In the fault shutdown mode, no more refresh
Input Action Display	When the output signal is valid,outLED flashes (software
IO process data size	4 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	90mA
Wiring parameters	
Connection technology	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

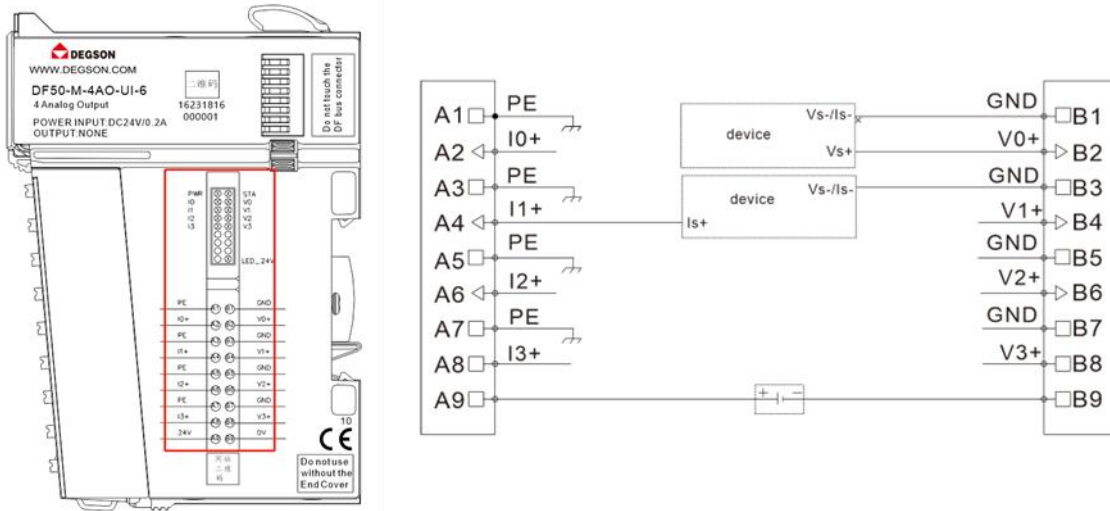## 7.2 Hardware Interface
7.2.1 WiringTerminal Definition
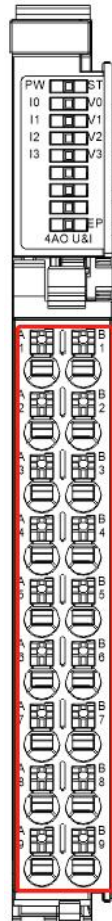
Terminal number	Signal	illustrate	Terminal number	Signal	illustrate
A1	PE	Safely	B1	GND	Negative voltage/current
A2	I0+	Current output channel 0	B2	V0+	Voltage output channel 0
A3	PE	Safely	B3	GND	Negative voltage/current
A4	I1+	Current output channel 1	B4	V1+	Voltage output channel 1
A5	PE	Safely	B5	GND	Negative voltage/current
A6	I2+	Current output channel 2	B6	V2+	Voltage output channel 2
A7	PE	Safely	B7	GND	Negative voltage/current
A8	I3+	Current output channel 3	B8	V3+	Voltage output channel 3
A9	24V	Terminal power input 24V	B9	0V	Terminal power input 0V

8Channel simulationVolumeOutput/voltage type

7.2.2 LED Indicatordefinition

Indicator Lights	meaning		
PW	Green:System bus powerSource Inputnormal		
	Green Kill:System bus powerSource Inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
EP	Green: The terminal power input is normal		
	Green off: Terminal power input abnormality		
I0～I3,V0～V3	Green flash: output signal is valid		
	Green off: Output signal is invalid		

8Channel simulationVolumeOutput/voltage type

7.2.3 Wiring Diagram

Note: A9 and B9 are external power input interfaces.

7.3 Process data definition

loseoutData: 8 Bytes	
Word No.	meaning
Word0	Channel 0 Inputoutdata
Word1	aisle1loseoutdata
Word2	aisle2loseoutdata
Word3	aisle3loseoutdata

Channel output data description:

Signal range	Voltage value (U)	Decimal data	Hexadecimal data	Scope	Conversion relationship
±10V	0V	>32511	>0x7EFF	Overflow	$D = 27648 \times U / 10$ $U = D \times 10 / 27648$
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	5V	13824	0x3600		
	0V	0	0x0000		
	-5V	-13824	0xCA00		
	-10V	-27648	0x9400		
	-11.76V	-32511	0x8101	Lower limit	
	0V	<-32511	<0x8101	Underflow	
0~10V	0V	>32511	>0x7EFF	Overflow	$D = 27648 \times U / 10$ $U = D \times 10 / 27648$
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	5V	13824	0x3600		
	0V	0	0x0000		
2~10V	0V	>32511	>0x7EFF	Overflow	$D = 27648 \times (U - 2) / 8$ $U = D \times 8 / 27648 + 2$
	11.41V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	6V	13824	0x3600		

8Channel simulationVolumeOutput/voltage type

Signal range	Voltage value (U)	Decimal data	Hexadecimal data	Scope	Conversion relationship
	2V	0	0x0000		
	0.59 V	-4864	0xED00	Lower limit	
	0 V	<-4864	<ED00	Underflow	
±5V	0V	>32511	>7EFF	Overflow	D = 27648 x U / 5 U = D x 5 / 27648
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		
	0V	0	0x0000		
	-2.5V	-13824	0xCA00		
	-5V	-27648	0x9400		
	-5.88V	-32511	0x8100	Lower limit	
	0V	<-32511	<0x8100	Underflow	
0~5V	0V	>32511	>0x7EFF	Overflow	D = 27648 x U / 5 U = D x 5 / 27648
	5.88V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		
	0V	0	0x0000		
1~5V	0V	>32511	>0x7EFF	Overflow	D = 27648 x (U – 1) / 4 U = D x 4 / 27648 + 1
	5.7V	32511	0x7EFF	Upper limit	
	5V	27648	0x6C00	Normal range	
	3V	13824	0x3600		
	1V	0	0x0000		
	0.3V	-4864	0xED00	Lower limit	
	0V	<-4864	<0xED00	Underflow	

Signal range	Current value (I)	Decimal data	Hexadecimal data	Scope	Conversion relationship
0~20ma	0ma	>32511	>0x7EFF	Overflow	D = 27648 xI/ 20 I= D x 20/ 27648
	23.52ma	32511	0x7EFF	Upper limit	
	20ma	27648	0x6C00	Normal range	
	10ma	13824	0x3600		
	0ma	0	0x0000		
4~20ma	0ma	>32511	>0x7EFF	Overflow	D = 27648 x (I– 4) / 16 I= D x 16 / 27648 + 4
	22.81ma	32511	0x7EFF	Upper limit	
	20ma	27648	0x6C00	Normal range	
	12ma	13824	0x3600		
	4ma	0	0x0000		
	1.19ma	-4864	0xED00	Lower limit	
	0ma	<-4864	<0xED00	Underflow	

8Channel simulationVolumeOutput/voltage type

7.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

8Channel simulationVolumeOutput/voltage type

8 8-channel analog output/voltage type (DF50-M-8AO-U-4)

➤ The analog output module can output voltage standard signal.

➤ 8-channel analog output, voltage type.

➤ The two LED indicators indicate that the module is operating normally and communicating normally.

➤ Magnetic isolation between the field level and the system level.

➤ Transmitted in 16-bit resolution.

➤ Protection grade IP20

8.1 Specifications

Technical Information	
Product Description	Analog output module, 8 outputs, voltage type
Number of channels	8
Output signal type	Voltage, single-ended signal
Resolution	16 Bit
Voltage output range	±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V
Voltage output load	>1KΩ
Voltage output accuracy (full temperature range)	±0.1%
Isolation	The interface channels are not isolated, the power supply is
Independent channel enable configuration	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable,±10V, 0~10V, 2~10V, ±5V, 0~5V, 1~5V
Output status configuration after shutdown	Clear and keep current output
Stop Mode	In the fault shutdown mode, no more refresh
Input Action Display	When the output signal is valid,outLED flashes (software
IO process data size	8 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	90mA
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

8.2 Hardware Interface
8.2.1 WiringTerminal Definition
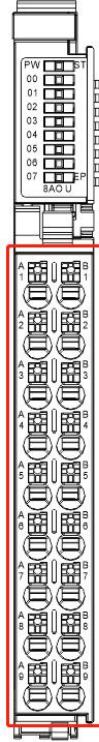
Terminal number	Signal	Terminal number	Signal	illustrate
A1	V0+	B1	V0-	Voltage output channel0
A2	V1+	B2	V1-	Voltage output channel1
A3	V2+	B3	V2-	Voltage output channel2
A4	V3+	B4	V3-	Voltage output channel3
A5	V4+	B5	V4-	Voltage output channel4
A6	V5+	B6	V5-	Voltage output channel5
A7	V6+	B7	V6-	Voltage output channel6
A8	V7+	B8	V7-	Voltage output channel7
A9	24V	B9	0V	Terminal power input

8Channel simulationVolumeOutput/voltage type

8.2.2 LED indicatorsdefinition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal
EP	Green: The terminal power input is normal	
	Green off: Terminal power input abnormality	
V0～V7	Green flash: output signal is valid	
	Green off: Output signal is invalid	

8Channel simulationVolumeOutput/voltage type

8.2.3 Wiring diagram
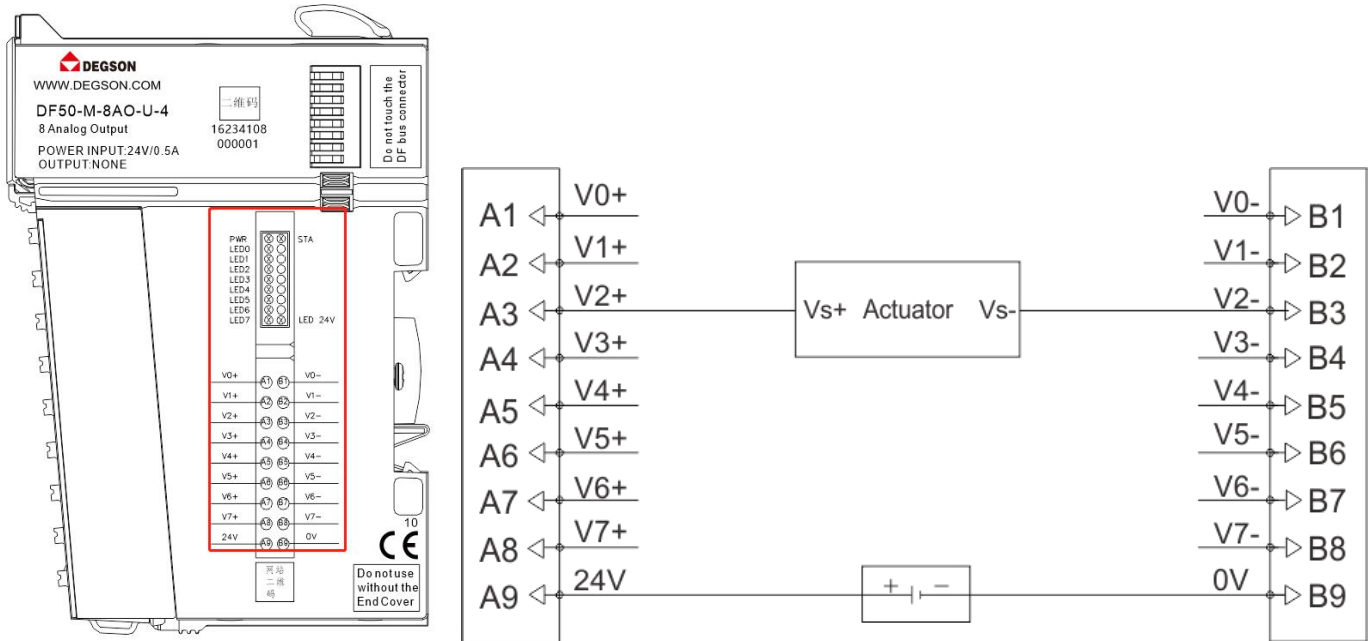
Note: A9, B9 24V power supply is provided externally.

8.3 Process data definition

loseoutdata:8Words	
Word No.	meaning
Word0	Channel 0 Inputoutdata
Word1	aisle1loseoutdata
Word2	aisle2loseoutdata
Word3	aisle3loseoutdata
Word4	aisle4loseoutdata
Word5	aisle5loseoutdata
Word6	aisle6loseoutdata
Word7	aisle7loseoutdata

Channel output data description:

Signal range	Voltage value (U)	Decimal data	Hexadecimal data	Scope	Conversion relationship
±10V	0V	>32511	>0x7EFF	Overflow	
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	D = 27648 x U / 10 U = D x 10 / 27648
	5V	13824	0x3600		
	0V	0	0x0000		
	-5V	-13824	0xCA00		
	-10V	-27648	0x9400		
	-11.76V	-32511	0x8101	Lower limit	
	0V	<-32511	<0x8101	Underflow	
0~10V	0V	>32511	>0x7EFF	Overflow	D = 27648 x U / 10 U = D x 10 / 27648
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	5V	13824	0x3600		

8Channel simulationVolumeOutput/voltage type

Range	Voltage	Decimal	Hex	Status	Formula
	0V	0	0x0000		
2~10V	0V	>32511	>0x7EFF	Overflow	D = 27648 x (U – 2) / 8
	11.41V	32511	0x7EFF	Upper limit	U = D x 8 / 27648 + 2
	10V	27648	0x6C00	Normal range	
	6V	13824	0x3600		
	2V	0	0x0000		
	0.59 V	-4864	0xED00	Lower limit	
	0 V	<-4864	<0xED00	Underflow	
±5V	0V	>32511	>0x7EFF	Overflow	D = 27648 x U / 5
	5.88V	32511	0x7EFF	Upper limit	U = D x 5 / 27648
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		
	0V	0	0x0000		
	-2.5V	-13824	0xCA00		
	-5V	-27648	0x9400		
	-5.88V	-32511	0x8100	Lower limit	
	0V	<-32511	<0x8101	Underflow	
0~5V	0V	>32511	>0x7EFF	Overflow	D = 27648 x U / 5
	5.88V	32511	0x7EFF	Upper limit	U = D x 5 / 27648
	5V	27648	0x6C00	Normal range	
	2.5V	13824	0x3600		
	0V	0	0x0000		
1~5V	0V	>32511	>0x7EFF	Overflow	D = 27648 x (U – 1) / 4
	5.7V	32511	0x7EFF	Upper limit	U = D x 4 / 27648 + 1
	5V	27648	0x6C00	Normal range	
	3V	13824	0x3600		
	1V	0	0x0000		
	0.3V	-4864	0xED00	Lower limit	
	0V	<-4864	<0xED00	Underflow	

8Channel simulationVolumeOutput/voltage type

8.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

8Channel simulationVolumeOutput/voltage type

9 8-channel analog output/current type (DF50-M-8AO-I-5)

➢ The analog output module can output current standard signal.

➢ 8-channel analog output, current type.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20

8Channel simulationVolumeOutput/current type
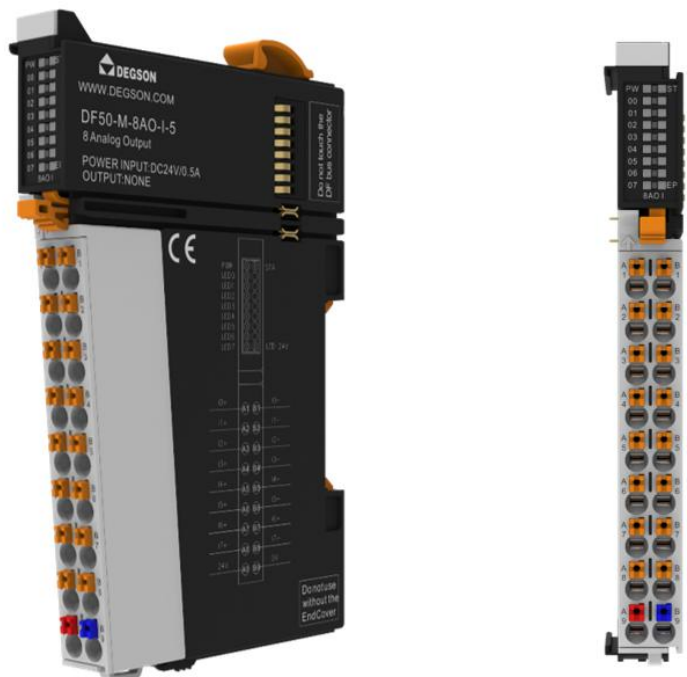
9.1 Specifications

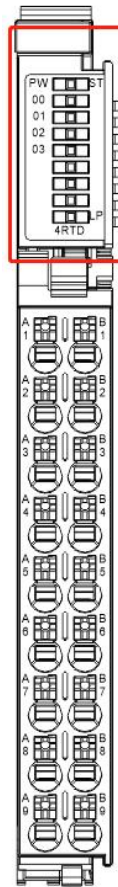| Technical Information	
Product Description	Analog output module, 8 outputs, current type
Number of channels	8
Output signal type	Current, single-ended output
Resolution	16 Bit
Current output range	0~20mA, 4~20mA
Current output load	<600Ω
Current output accuracy	±0.1%
Isolation	The interface channels are not isolated, the power supply is
Independent channel enable configuration	support
Diagnosis reporting function configuration	support
Channel Mode Configuration	Disable,0~20mA, 4~20mA
Output status configuration after shutdown	Clear and keep current output
Stop Mode	In the fault shutdown mode, no more refresh
Input Action Display	When the output signal is valid,outLED flashes (software
IO process data size	8 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	33mA
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

9.2 Hardware Interface
9.2.1 WiringTerminal Definition
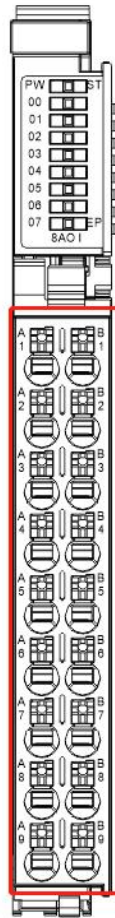
Terminal number	Signal	Terminal number	Signal	illustrate
A1	V0+	B1	V0-	Current output channel 0
A2	V1+	B2	V1-	Current output channel 1
A3	V2+	B3	V2-	Current output channel 2
A4	V3+	B4	V3-	Current output channel 3
A5	V4+	B5	V4-	Current output channel 4
A6	V5+	B6	V5-	Current output channel 5
A7	V6+	B7	V6-	Current output channel 6
A8	V7+	B8	V7-	Current output channel 7
A9	24V	B9	0V	Terminal power input

8Channel simulationVolumeOutput/current type

9.2.2 LED indicatorsdefinition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal
EP	Green: The terminal power input is normal	
	Green off: Terminal power input abnormality	
I0~I7	Green flash: output signal is valid	
	Green off: Output signal is invalid	

8Channel simulationVolumeOutput/current type

9.2.3 Wiring Diagram
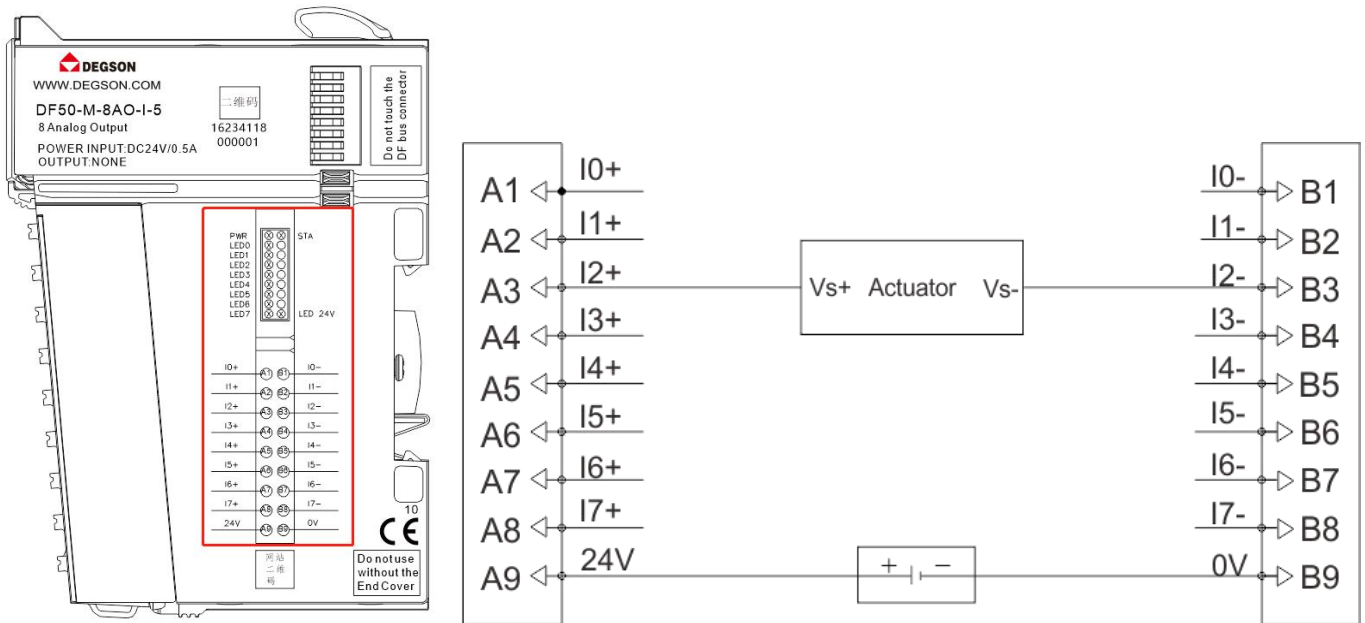
Note: A9, B9 24V power supply is provided externally.

9.3 Process Data Definition

loseoutdata:16Byte	
Word No.	meaning
Word0	Channel 0 Inputoutdata
Word1	aisle1loseoutdata
Word2	aisle2loseoutdata
Word3	aisle3loseoutdata
Word4	aisle4loseoutdata
Word5	aisle5loseoutdata
Word6	aisle6loseoutdata
Word7	aisle7loseoutdata

Channel output data description:

Signal range	Current value (I)	Decimal data	Hexadecimal data	Scope	Conversion relationship
0~20ma	0ma	>32511	>0x7EFF	Overflow	D = 27648 xI/ 20 I= D x 20/ 27648
	23.52ma	32511	0x7EFF	Upper limit	
	20ma	27648	0x6C00	Normal range	
	10ma	13824	0x3600		
	0ma	0	0x0000		
4~20ma	0ma	>32511	>0x7EFF	Overflow	D = 27648 x (I– 4) / 16 I= D x 16 / 27648 + 4
	22.81ma	32511	0x7EFF	Upper limit	
	20ma	27648	0x6C00	Normal range	
	12ma	13824	0x3600		
	4ma	0	0x0000		
	1.19ma	-4864	0xED00	Lower limit	
	0ma	<-4864	<-0xED00	Underflow	

8Channel simulationVolumeOutput/current type

9.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

8Channel simulationVolumeOutput/current type

10 4-channel RTD measurement (DF50-M-4RTD-PT)

➢ The module uses 4-channel thermal resistance measurement and supports a variety of conventional thermal resistances.

➢ Supports four sensors.

➢ Supports 2-wire, 3-wire, and 4-wire sensors.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Each channel has an LED indicator.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20.

4Channel thermal resistance measurement

10.1 Specifications

Technical Information	
Product Description	RTD measurement module, 16-bit resolution, 4 channels
Number of channels	4
Sensor Type	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni 200,
Resolution/Display sensitivity	16bit, 0.1°C/bit
Accuracy	±0.3%
Connection method	Two-wire/three-wire system
Isolation	Isolation between interface channels, isolation between interface
Channel diagnostics	Over-limit alarm, over-lower limit alarm, disconnection alarm,
Diagnosis reporting function configuration	support
Frequency interference suppression	50Hz | 60Hz
Sampling frequency	7.5Hz~1.25Hz configurable,
Input Action Display	When the input signal is valid, the input indicator flashes
IO process data size	4 Word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	30mA
Internal load power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Internal load power input rated current	10mA
Wiring parameters	
Connection technology:	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

4Channel thermal resistance measurement

10.2 Hardware Interface
10.2.1 WiringTerminal Definition
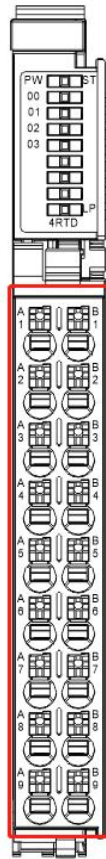
Terminal number	Signal	Terminal number	Signal	illustrate
A1	RTD0+	B1	RTD0-	The first channel signal input
A2	Sense0+	B2	Sense0-	
A3	RTD1+	B3	RTD1-	Second channel signal input
A4	Sense1+	B4	Sense1-	
A5	RTD2+	B5	RTD2-	The third channel signal input
A6	Sense2+	B6	Sense2-	
A7	RTD3+	B7	RTD3-	The fourth channel signal input
A8	Sense3+	B8	Sense3-	
A9	/	B9	/	Reserved for hanging

4Channel thermal resistance measurement

10.2.2 LED Indicatordefinition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off/green on: The internal bus of the module is working abnormally orInternal LoadPower input abnormality
LP	Green:Internal load power inputnormal	
	Green off:Internal load power inputabnormal	
00～03	Green flash: input signal is valid	
	Green off: Input signal is invalid	

4Channel thermal resistance measurement

10.2.3 Wiring Diagram
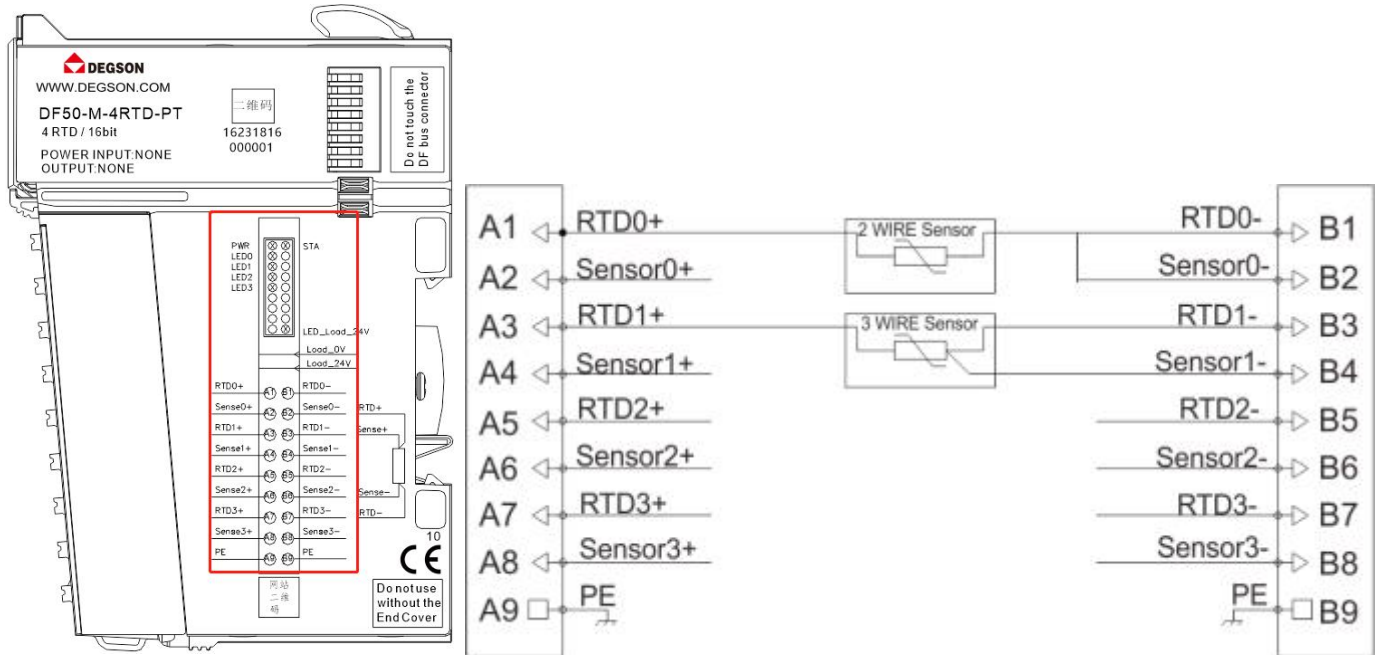
10.3 Process Data Definition

loseenterdata:4Words	
Word No.	meaning
Word0	Channel 0 Inputenterdata
Word1	aisle1loseenterdata
Word2	aisle2loseenterdata
Word3	aisle3loseenterdata

Channel output data description:

PT100			
temperature	Decimal	hexadecimal	Scope
>850	32767	0x7FFF	Overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Sensor not	-32768	0x8000	Disconnection detection

PT200			
temperature	Decimal	hexadecimal	Scope
>850	32767	0x7FFF	Overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

PT500			
temperature	Decimal	hexadecimal	Scope
>850	32767	0x7FFF	Overflow

4Channel thermal resistance measurement

850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

PT1000			
temperature	Decimal	hexadecimal	Scope
>850	32767	0x7FFF	Overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Ni100			
temperature	Decimal	hexadecimal	Scope
>250	32767	0x7FFF	Overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Ni120			
temperature	Decimal	hexadecimal	Scope
>309	32767	0x7FFF	Overflow
309	3090	0x0C12	Normal range
-79	-790	0xFCEA	
<-79	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

NI200			
temperature	Decimal	hexadecimal	Scope
>250	32767	0x7FFF	Overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Ni500			
temperature	Decimal	hexadecimal	Scope
>250	32767	0x7FFF	Overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Ni1000

4Channel thermal resistance measurement

temperature	Decimal	hexadecimal	Scope
>250	32767	0x7FFF	Overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Cu10 type			
temperature	Decimal	hexadecimal	Scope
>159	32767	0x7FFF	Overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Cu50			
temperature	Decimal	hexadecimal	Scope
>159	32767	0x7FFF	Overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Cu53			
temperature	Decimal	hexadecimal	Scope
>150	32767	0x7FFF	Overflow
150	1500	0x05DC	Normal range
-50	-500	0xFE0C	
<-50	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Cu100			
temperature	Decimal	hexadecimal	Scope
>159	32767	0x7FFF	Overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

KTY84_130			
temperature	Decimal	hexadecimal	Scope
>280	32767	0x7FFF	Overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

4Channel thermal resistance measurement

KTY84_150			
temperature	Decimal	hexadecimal	Scope
>280	32767	0x7FFF	Overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

KTY84_151			
temperature	Decimal	hexadecimal	Scope
>280	32767	0x7FFF	Overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

0-40ohm type			
Ohm value	Decimal	hexadecimal	Scope
>319.25ohm	-32768	0x8000	Beyond the limit
>47.03ohm	32767	0x7FFF	Upper limit
47.03ohm	32511	0x7EFF	Overflow
40ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-80ohm type			
Ohm value	Decimal	hexadecimal	Scope
>319.25ohm	-32768	0x8000	Beyond the limit
>94.07ohm	32767	0x7FFF	Upper limit
94.07ohm	32511	0x7EFF	Overflow
80ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-150ohm type			
Ohm value	Decimal	hexadecimal	Scope
>319.25ohm	-32768	0x8000	Beyond the limit
>176.38ohm	32767	0x7FFF	Upper limit
176.38ohm	32511	0x7EFF	Overflow
150ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

4Channel thermal resistance measurement

0-300ohm type			
Ohm value	Decimal	hexadecimal	Scope
>638.5ohm	-32768	0x8000	Beyond the limit
>352.77ohm	32767	0x7FFF	Upper limit
352.77ohm	32511	0x7EFF	Overflow
300ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-500ohm type			
Ohm value	Decimal	hexadecimal	Scope
>638.5ohm	-32768	0x8000	Beyond the limit
>587.94ohm	32767	0x7FFF	Upper limit
587.94ohm	32511	0x7EFF	Overflow
500ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-1000ohm type			
Ohm value	Decimal	hexadecimal	Scope
>1277ohm	-32768	0x8000	Beyond the limit
>1175.89ohm	32767	0x7FFF	Upper limit
1175.89ohm	32511	0x7EFF	Overflow
1000ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-2000ohm type			
Ohm value	Decimal	hexadecimal	Scope
>2554ohm	-32768	0x8000	Beyond the limit
>2351.78ohm	32767	0x7FFF	Upper limit
2351.78ohm	32511	0x7EFF	Overflow
2000ohm	27648	0x6C00	Normal range
0ohm	0	0x0000	
Sensor not connected	-32768	0x8000	Disconnection detection

0-4000ohm type			
Ohm value	Decimal	hexadecimal	Scope
>5108ohm	-32768	0x8000	Beyond the limit
>4703.56ohm	32767	0x7FFF	Upper limit
4703.56ohm	32511	0x7EFF	Overflow
4000ohm	27648	0x6C00	Normal range
0ohm	0	0	
Sensor not connected	-32768	0x8000	Disconnection detection

4Channel thermal resistance measurement

10.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

4Channel thermal resistance measurement
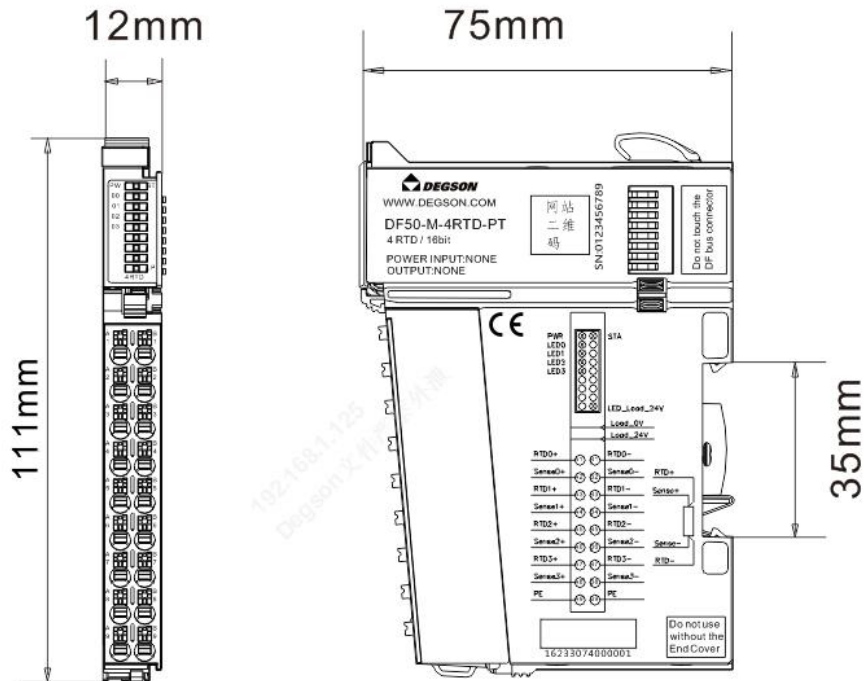
11 8-channel thermocouple measurement (DF50-M-8TC)

➢ The module uses 8-channel thermocouple measurement and supports K/E/T/J/B/S/R/N/L and millivolt voltage sensors.

➢ Supports eight sensors.

➢ Supports 2-wire sensors.

➢ This module reserves eight cold-end compensation output channels to compensate for cold-end temperature differences.

➢ Each channel has an LED indicator.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Each channel has an LED indicator.

➢ Magnetic isolation between the field level and the system level.

➢ Transmitted in 16-bit resolution.

➢ Protection grade IP20.

11.1 Specifications

Technical Information	
Product Description	Thermocouple measurement module, 16-bit resolution, 8 channels
Number of channels	8
Sensor Type	K, E, T, J, B, S, R, N, L and millivolt voltage sensors
Resolution/Display sensitivity	16bit, 0.1°C/bit
Connection method	Two lines
Accuracy	±0.3%
Isolation	Isolation between interface channels, isolation between interface
Channel diagnostics	Over-limit alarm, over-lower limit alarm, disconnection alarm,
Diagnosis reporting function configuration	support
Frequency interference suppression	50Hz | 60Hz
Filter time	61.25ms~7200ms configurable,
Input Action Display	When the input signal is valid, the input indicator flashes
IO process data size	Input: 8 Words; Output: 8 Words
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	35mA
Internal load power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Internal load power input rated current	10mA
Wiring parameters	
Connection technology	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

11.2 Hardware Interface
11.2.1 WiringTerminal Definition
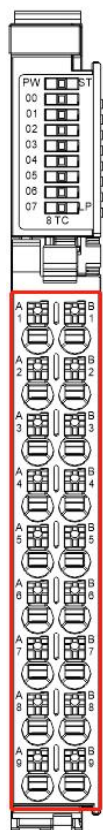
Terminal number	Signal	Terminal number	Signal	illustrate
A1	TC0+	B1	TC0-	Signal input channel 0
A2	TC1+	B2	TC1-	Signal input channel 1
A3	TC2+	B3	TC2-	Signal input channel 2
A4	TC3+	B4	TC3-	Signal input channel 3
A5	TC4+	B5	TC4-	Signal input channel 4
A6	TC5+	B6	TC5-	Signal input channel 5
A7	TC6+	B7	TC6-	Signal input channel 6
A8	TC7+	B8	TC7-	Signal input channel 7
A9	/	B9	/	Reserved for hanging

11.2.2 LED Indicatordefinition

Indicator Lights	meaning		
PW	Green:System bus powerSource Inputnormal		
	Green Kill:System bus powerSource Inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally orInternal LoadPower input abnormality	
LP	Green:Internal load power inputnormal		
	Green off:Internal load power inputabnormal		
00～07	Green flash: input signal is valid		
	Green off: Input signal is invalid		

11.2.3 Wiring Diagram
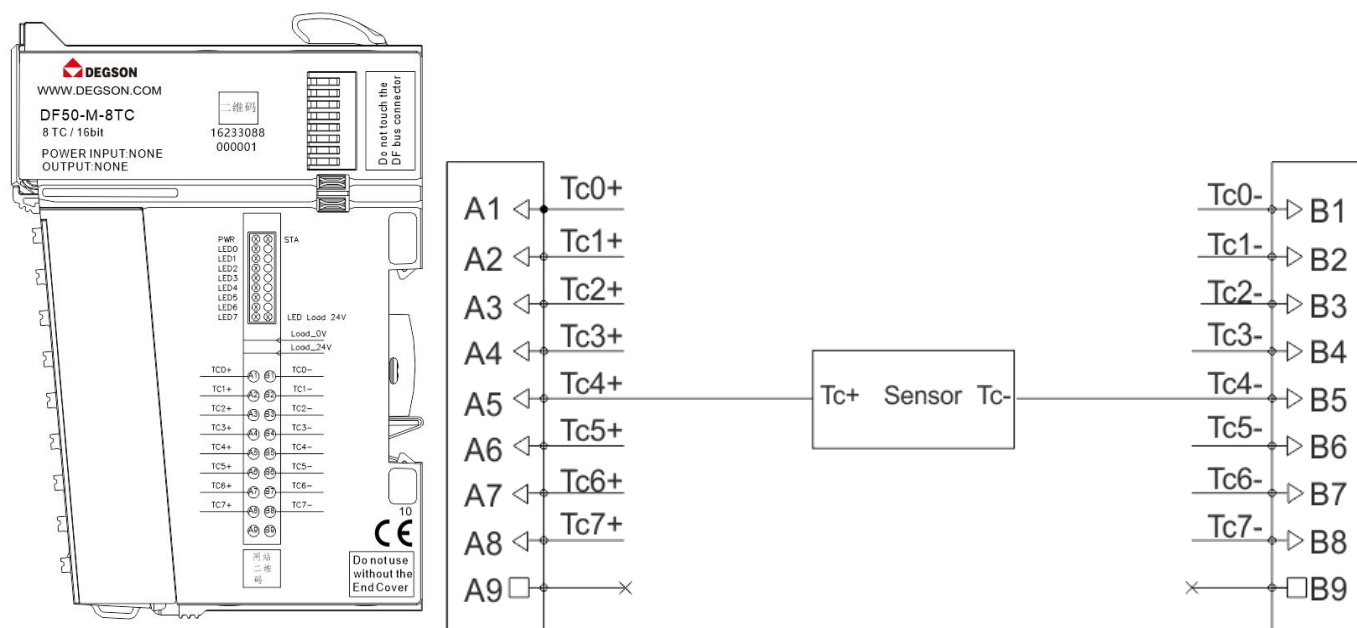
11.3 Process Data Definition

loseenterdata:16Byte	
Word No.	meaning
Word0	Channel 0 Inputenterdata
Word1	aisle1loseenterdata
Word2	aisle2loseenterdata
Word3	aisle3loseenterdata
Word4	aisle4loseenterdata
Word5	aisle5loseenterdata
Word6	aisle6loseenterdata
Word7	aisle7loseenterdata

loseoutdata:16Byte	
Word No.	meaning
Word0	Channel 0compensatedata
Word1	aisle1 Compensationdata
Word2	aisle2 Compensationdata
Word3	aisle3. Compensationdata
Word4	aisle4 Compensationdata
Word5	aisle5. Compensationdata
Word6	aisle6 Compensationdata
Word7	aisle7. Compensationdata

Channel output data description:

K-Type			
temperature	Decimal	hexadecimal	Scope
>1370	32767	0x7FFF	Overflow
1370	13700	0x3584	Normal range
-270	-2700	0xF574	
<-270	-32767	0x8001	Underflow

8Channel thermocouple measurement

Sensor not	-32768	0x8000	Disconnection detection

Type E			
temperature	Decimal	hexadecimal	Scope
>1000	32767	0x7FFF	Overflow
1000	10000	0x2710	Normal range
-270	-2700	0xF574	
<-270	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

T-Type			
temperature	Decimal	hexadecimal	Scope
>400	32767	0x7FFF	Overflow
400	4000	0x0FA0	Normal range
-270	-2700	0xF574	
<-270	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

J-Type			
temperature	Decimal	hexadecimal	Scope
>1200	32767	0x7FFF	Overflow
1200	12000	0x2EE0	Normal range
-210	-2100	0xF7CC	
<-210	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

Type B			
temperature	Decimal	hexadecimal	Scope
>1830	32767	0x7FFF	Overflow
1830	18300	0x477C	Normal range
50	500	0x01F4	
<50	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection detection

S-Type			
temperature	Decimal	hexadecimal	Scope
>1760	32767	0x7FFF	Overflow
1760	17600	0x44C0	Normal range
-50	-500	0xFE0C	
<-50	-32767	0x8001	Underflow
Sensor not connected	-32768	0x8000	Disconnection

R-Type			
temperature	Decimal	hexadecimal	Scope
>250	32767	0x7FFF	Overflow

8Channel thermocouple measurement

250	2500	0x09C4	Normal range
−60	−600	0xFDA8	
<−60	−32767	0x8001	Underflow
Sensor not connected	−32768	0x8000	Disconnection

Ni500			
temperature	Decimal	hexadecimal	Scope
>1770	32767	0x7FFF	Overflow
1770	17700	0x4524	Normal range
−50	−500	0xFE0C	
<−50	−32767	0x8001	Underflow
Sensor not connected	−32768	0x8000	Disconnection

Type C			
temperature	Decimal	hexadecimal	Scope
>2320	32767	0x7FFF	Overflow
2320	23200	0x5AA0	Normal range
0	0	0	
<0	−32767	0x8001	Underflow
Sensor not connected	−32768	0x8000	Disconnection

L-type			
temperature	Decimal	hexadecimal	Scope
>900	32767	0x7FFF	Overflow
900	9000	0x2328	Normal range
−200	−2000	0xF830	
<−200	−32767	0x8001	Underflow
Sensor not connected	−32768	0x8000	Disconnection

N-type			
temperature	Decimal	hexadecimal	Scope
>1300	32767	0x7FFF	Overflow
1300	13000	0x32C8	Normal range
−270	−2700	0xF574	
<−270	−32767	0x8001	Underflow
Sensor not connected	−32768	0x8000	Disconnection

±15.625mV			
Signal	Decimal	hexadecimal	Scope
15.625mV	32767	0x7FFF	Normal range
−15.625mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

±31.25mV			
Signal	Decimal	hexadecimal	Scope

8Channel thermocouple measurement

31.25mV	32767	0x7FFF	Normal range
-31.25mV	-32767	0x8001	
Sensor not connected	-32768	0x8000	Disconnection detection

±62.5mV			
Signal	Decimal	hexadecimal	Scope
62.5mV	32767	0x7FFF	Normal range
−62.5mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

±125mV			
Signal	Decimal	hexadecimal	Scope
125mV	32767	0x7FFF	Normal range
−125mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

±500mV			
Signal	Decimal	hexadecimal	Scope
500mV	32767	0x7FFF	Normal range
−500mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

±1000mV			
Signal	Decimal	hexadecimal	Scope
1000mV	32767	0x7FFF	Normal range
−1000mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

±2000mV			
Signal	Decimal	hexadecimal	Scope
2000mV	32767	0x7FFF	Normal range
−2000mV	−32767	0x8001	
Sensor not connected	−32768	0x8000	Disconnection

8Channel thermocouple measurement

11.4 Mechanical Installation

InstallSize letterinterestAs shown in the figure below, the unit is (mm）:

8Channel thermocouple measurement
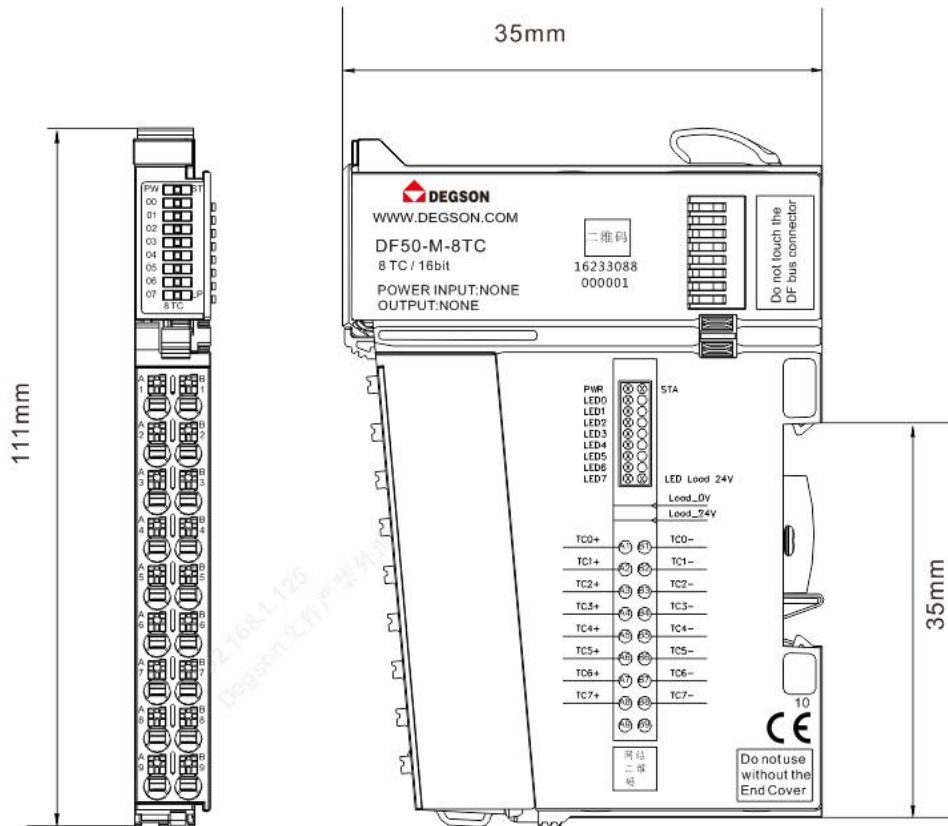
12 2-channel encoder pulse counting/24VDC (DF50-M-2CNT-PIL-24)

➢ This pulse counting module adopts 2-channel pulse counting. The input signal voltage is 24VDC.

➢ Each input module is equipped with an anti-interference filter.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Protection grade IP20.

12.1 Specifications

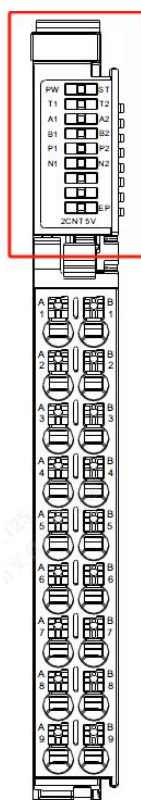| Technical Information	
Product Description	High speed counting module, 2 channels
Number of channels	2
Signal Type	Incremental encoder AB / pulse + direction signal
Maximum input frequency	1MHZ
Input signal voltage	24V DC
Connection Type	2-wire/4-wire
Quadrature encoder frequency multiplication	x1/x2/x4
Counting Mode	Linear counter form, ring counter form
Count latch/reset function	Support, configurable
Filter function	Support, configurable
Counting range	−2147483648~2147483647
Accuracy	±1 pulse
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	support
Input Action Display	When the input is in driving state, the indicator light is on (software control)
IO process data size	Output:12Byte; Input:20Byte
IO data mapping	Access by word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	115mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	2A
Terminal power output rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power output rated current	1A
Wiring parameters	
Connection technology:	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

## 12.2 Hardware Interface
12.2.1 Terminal Block Definition

Terminal number	Signal	Terminal number	Signal	illustrate
A1	24Vo	B1	GND	Terminal power output
A2	TP1_in+	B2	TP1_in-	DI signal input
A3	A1+	B3	A1-	Orthogonal encoding mode A phase signal input/ Pulse plus direction mode direction signal input
A4	B1+	B4	B1-	Orthogonal encoding mode B phase signal input/ Pulse plus direction mode pulse signal input
A5	24Vo	B5	GND	Terminal power output
A6	TP2_in+	B6	TP2_in-	DI signal input
A7	A2+	B7	A2-	Orthogonal encoding mode A phase signal input/ Pulse plus direction mode direction signal input
A8	B2+	B8	B2-	Orthogonal encoding mode B phase signal input/ Pulse plus direction mode pulse signal input
A9	24Vin	B9	0V	Terminal power input

12.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally.
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal
T1/T2	Green: DI input signal is valid	
	Green off: DI input signal is invalid	
A1/A2	Green: Input signal is valid	
	Green off: Input signal is invalid	
B1/B2	Green: Input signal is valid	
	Green off: Input signal is invalid	
P1/P2	Green: Encoder is rotating forward	
	Green off: Encoder is stationary or reversed	
N1/N2	Green: Encoder reverse	
	Green off: Encoder is stationary or rotating forward	
EP	Green: The terminal power input is normal	
	Green off: Terminal power input abnormality	

12.2.3 Wiring Diagram
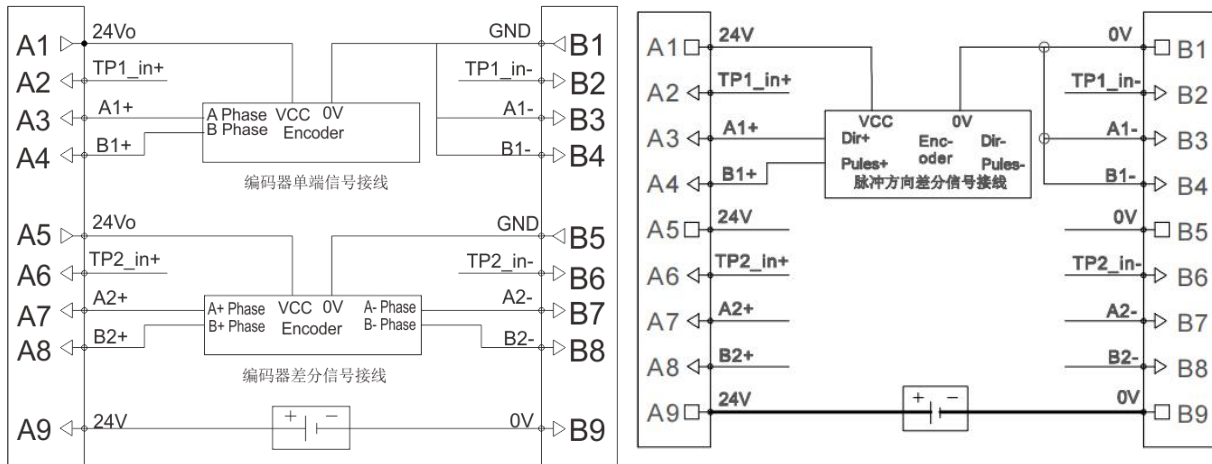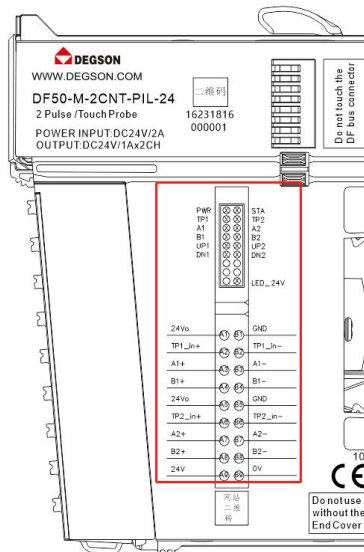
Note: A9, B9 24V power supply is provided externally.

12.3 Configuration Data Definition

name	Value range	default value	meaning
Ch0: Signal Type	See En0815 table	2	Channel 0 signal type configuration
Ch0: DI Signal Function	See En0816 table	0	Channel 0 DI signal function configuration
Ch0: Filter Time Signal A	See En0817 table	14	Channel 0 A phase signal filter configuration
Ch0: Filter Time Signal B	See En0817 table	14	Channel 0 B phase signal filter configuration
Ch0: Directional Logic	See En0818 table	0	Channel 0 direction logic configuration
Ch0: Count Mode	See En0819 table	0	Channel 0 counting mode configuration
Ch0: Comparison Function	See En081A table	0	Channel 0 comparison function configuration
Ch0: Field Bus Error	See En081B table	0	Channel 0 bus abnormality counting action configuration
Ch0: Upper Limit	-2147483648 ~2147483647	2147483647	Channel 0 cycle mode upper limit
Ch0: Lower Limit	-2147483648 ~2147483647	-2147483648	Channel 0 cycle mode lower limit
Ch1: Signal Type	See En0815: Table	2	Channel 1 signal type configuration
Ch1: DI Signal Function	See En0816: Table	0	Channel 1 DI signal function configuration
Ch1: Filter Time Signal A	See En0817: Table	14	Channel 1 A phase signal filter configuration
Ch1: Filter Time Signal B	See En0817: Table	14	Channel 1 B phase signal filter configuration
Ch1: Directional Logic	See En0818: Table	0	Channel 1 Direction Logic Configuration
Ch1: Count Mode	See En0819: Table	0	Channel 1 counting mode configuration
Ch1: Comparison Function	See En081A: Table	0	Channel 1 comparison function configuration
Ch1: Field Bus Error	See En081B:	0	Channel 1 bus abnormality

		Table		counting action configuration
Ch1: Upper Limit	-2147483648 ~2147483647	2147483 647	Channel 1 cycle mode upper limit
Ch1: Lower Limit	-2147483648 ~2147483647	-214748 3648	Channel 1 cycle mode lower limit

Table En0815

Serial number	name	meaning
0	Rotary transducer single	Orthogonal coding 1x frequency
1	Rotary transducer double	Orthogonal coding 2 times frequency
2	Rotary transducer quadurpe	Orthogonal coding 3 times frequency
3	Pulse and Directions	Pulse plus direction mode
4	CW/CCW (Unused)	(Not supported yet)

Table En0816

Serial number	name	meaning
0	Disable	Disable DI trigger
1	Rising edge capture	Rising edge latch
2	Falling edge capture	Falling edge latch
3	Bilateral edge capture	Double edge latch
4	Rising edge reset	Rising edge reset
5	Falling edge reset	Falling edge reset
6	Bilateral edge reset	Double edge reset

Table En0817

Serial number	name
3	4MHZ
4	1.5MHZ
5	1MHZ
6	800KHZ
7	600KHZ
8	420KHZ
9	315KHZ
10	250KHZ
11	200KHZ
12	160KHZ
13	120KHZ
14	100KHZ
15	75KHZ

Table En0818

Serial number	name	meaning
0	Positive logic	Direction positive logic
1	Negative logic	Direction negative logic

Table En0819

Serial number	name	meaning
0	Line Counter	Linear Counting
1	Ring Counter	Cycle Count

Table En081A

Serial number	name	meaning
0	Disable	Turn off comparison
1	Enable	Enable compare function

Table En081B

Serial number	name	meaning
0	Continue counting	Continue counting
1	Hold last value	Keep the current count value
2	Clear last value	Clear count value

12.4 Process Data Definition

Output data meaning(Rw)		
The first channel output data		
Byte0~Byte1	Bit15~bit1	reserve
	bit0	0: Channel 1 stops counting and the original count is reset to zero; 1: Channel 1
Byte2~Byte5		Channel 1 pulse comparison value output, range: –2147483648~2147483647
Second channel output data		
Byte6~Byte7	Bit15~bit1	reserve
	bit0	0: Channel 2 stops counting and the original count is cleared; 1: Channel 2 starts
Byte8~Byte11		Channel 2 pulse comparison value output, range: –2147483648~2147483647

Input data meaning(Rr)		
First channel input data		
Byte0~Byte1	Bit15~bit5	reserve
	bit3~bit4	0: Channel 1 stops; 1: Channel 1 counts up; 2: Channel 1 counts down
	bit2	0: Channel 1 count value is less than the comparison value; 1: Channel 1 count
	bit1	0: No electronic probe/1st channel count reset signal 1: Electronic probe/channel
	bit0	0: Channel 1 counting stop state, the original count is cleared; 1: Channel 1

Byte2~Byte5	Channel 1 pulse input value, range: –2147483648~2147483647	
Byte6~Byte9	Channel 1 pulse input latch value, range: –2147483648~2147483647	
Second channel input data		
Byte10~Byte 11	Bit15~bit5	Reserved seat
	bit3~bit4	0: Channel 2 stops; 1: Channel 2 counts up; 2: Channel 2 counts down
	bit2	0: Channel 2 count value is less than the comparison value; 1: Channel 2 count value is greater than the equalComparison value
	bit1	0: No electronic probe/channel 2 count reset signal 1: Electronic probe/channel count reset signal
	bit0	0: Channel2Counting stop state, the original count is cleared; 1: Channel2Counting start up
Byte12~Byte15	aisle2Pulse input value, range: –2147483648~2147483647	
Byte16~Byte19	aisle2Pulse input latch value, range: –2147483648~2147483647	

12.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
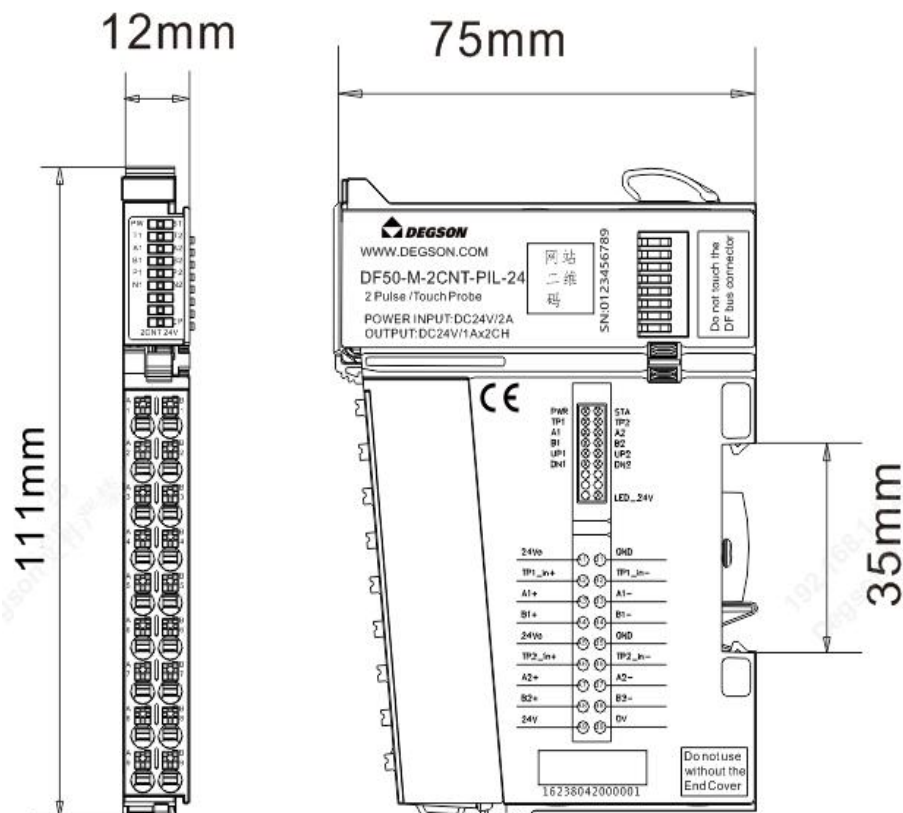
13 2-channel encoder pulse counting/5VDC (DF50-M-2CNT-PIL-5)

➢ This pulse counting module adopts 2-channel pulse counting. The input signal voltage is 5VDC.

➢ Each input module is equipped with an anti-interference filter.

➢ The two LED indicators indicate that the module is operating normally and communicating normally.

➢ Magnetic isolation between the field level and the system level.

➢ Protection grade IP20.

13.1 Specifications

Technical Information	
Product Description	High speed counting module, 2 channels
Number of channels	2
Signal Type	Incremental encoder AB / pulse + direction signal
Maximum input frequency	4MHZ
Input signal voltage	5V DC
Connection Type	2-wire/4-wire
Quadrature encoder frequency multiplication	x1/x2/x4
Counting Mode	Linear counter form, ring counter form
Count latch/reset function	Support, configurable
Filter function	Support, configurable
Counting range	−2147483648~2147483647
Accuracy	±1 pulse
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	support
Input Action Display	When the input is in driving state, the indicator light is on (software control)
IO process data size	Output:12Byte; Input:20Byte
IO data mapping	Access by word
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	115mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	2A
Terminal power output rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power output rated current	1A
Wiring parameters	
Connection technology:	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

13.2 Hardware Interface
13.2.1 Terminal Block Definition
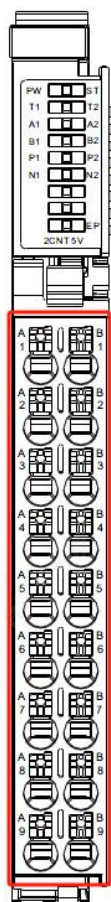
Terminal number	Signal	Terminal number	Signal	illustrate
A1	5V	B1	GND	Terminal power output
A2	TP1_in+	B2	TP1_in-	DI signal input
A3	A1+	B3	A1-	Orthogonal encoding mode A phase signal input/ Pulse plus direction mode direction signal input
A4	B1+	B4	B1-	Orthogonal encoding mode B phase signal input/ Pulse plus direction mode pulse signal input
A5	5V	B5	GND	Terminal power output
A6	TP2_in+	B6	TP2_in-	DI signal input
A7	A2+	B7	A2-	Orthogonal encoding mode A phase signal input/ Pulse plus direction mode direction signal input
A8	B2+	B8	B2-	Orthogonal encoding mode B phase signal input/ Pulse plus direction mode pulse signal input
A9	24Vin	B9	0V	Terminal power input

13.2.2 LED indicator definition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally.	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
T1/T2	Green: DI input signal is valid		
	Green off: DI input signal is invalid		
A1/A2	Green: Input signal is valid		
	Green off: Input signal is invalid		
B1/B2	Green: Input signal is valid		
	Green off: Input signal is invalid		
P1/P2	Green: Encoder is rotating forward		
	Green off: Encoder is stationary or reversed		
N1/N2	Green: Encoder reverse		
	Green off: Encoder is stationary or rotating forward		
EP	Green: The terminal power input is normal		
	Green off: Terminal power input abnormality		

13.2.3 Wiring Diagram
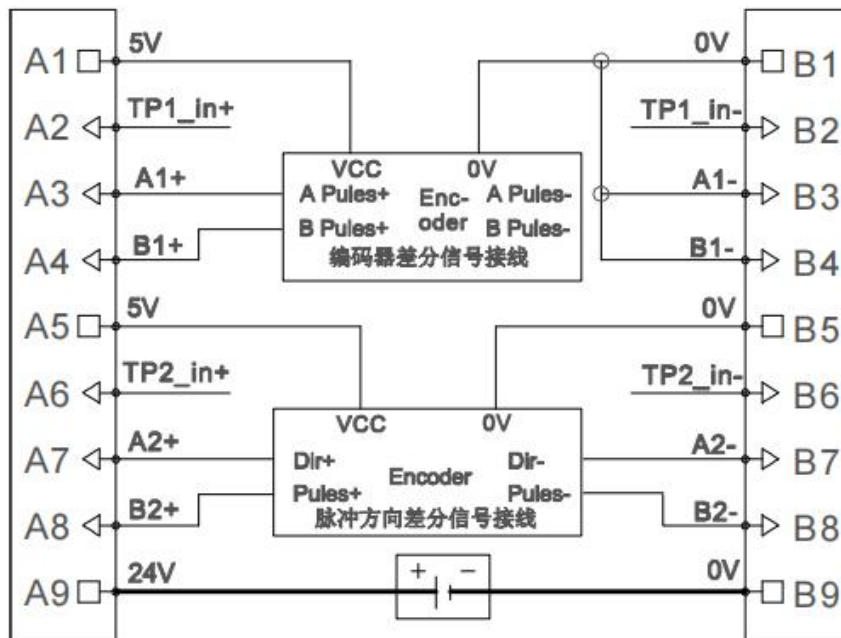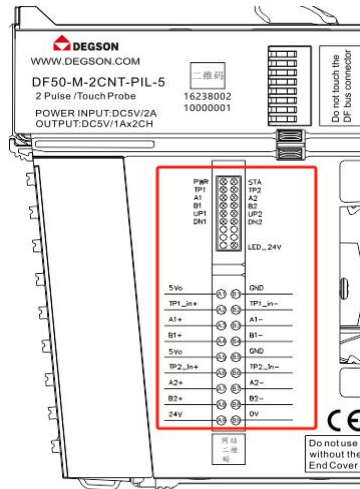
Note: A9, B9 24V power supply is provided externally.

13.3 Configuration Data Definition

name	Value range	default value	meaning
Ch0: Signal Type	See En0815 table	2	Channel 0 signal type configuration
Ch0: DI Signal Function	See En0816 table	0	Channel 0 DI signal function configuration
Ch0: Filter Time Signal A	See En0817 table	14	Channel 0 A phase signal filter configuration
Ch0: Filter Time Signal B	See En0817 table	14	Channel 0 B phase signal filter configuration
Ch0: Directional Logic	See En0818 table	0	Channel 0 direction logic configuration
Ch0: Count Mode	See En0819 table	0	Channel 0 counting mode configuration
Ch0: Comparison Function	See En081A table	0	Channel 0 comparison function configuration
Ch0: Field Bus Error	See En081B table	0	Channel 0 bus abnormality counting action configuration
Ch0: Upper Limit	-2147483648 ~2147483647	2147483 647	Channel 0 cycle mode upper limit
Ch0: Lower Limit	-2147483648 ~2147483647	-214748 3648	Channel 0 cycle mode lower limit
Ch1: Signal Type	See En0815: Table	2	Channel 1 signal type configuration
Ch1: DI Signal Function	See En0816: Table	0	Channel 1 DI signal function configuration
Ch1: Filter Time Signal A	See En0817: Table	14	Channel 1 A phase signal filter configuration
Ch1: Filter Time Signal B	See En0817: Table	14	Channel 1 B phase signal filter configuration
Ch1: Directional Logic	See En0818: Table	0	Channel 1 Direction Logic Configuration
Ch1: Count Mode	See En0819: Table	0	Channel 1 counting mode configuration
Ch1: Comparison Function	See En081A: Table	0	Channel 1 comparison function configuration
Ch1: Field Bus Error	See En081B:	0	Channel 1 bus abnormality

	Table		counting action configuration
Ch1: Upper Limit	-2147483648 ~2147483647	2147483 647	Channel 1 cycle mode upper limit
Ch1: Lower Limit	-2147483648 ~2147483647	-214748 3648	Channel 1 cycle mode lower limit

Table En0815

Serial number	name	meaning
0	Rotary transducer single	Orthogonal coding 1x frequency
1	Rotary transducer double	Orthogonal coding 2 times frequency
2	Rotary transducer quadurpe	Orthogonal coding 3 times frequency
3	Pulse and Directions	Pulse plus direction mode
4	CW/CCW (Unused)	(Not supported yet)

Table En0816

Serial number	name	meaning
0	Disable	Disable DI trigger
1	Rising edge capture	Rising edge latch
2	Falling edge capture	Falling edge latch
3	Bilateral edge capture	Double edge latch
4	Rising edge reset	Rising edge reset
5	Falling edge reset	Falling edge reset
6	Bilateral edge reset	Double edge reset

Table En0817

Serial number	name
3	4MHZ
4	1.5MHZ
5	1MHZ
6	800KHZ
7	600KHZ
8	420KHZ
9	315KHZ
10	250KHZ
11	200KHZ
12	160KHZ
13	120KHZ
14	100KHZ
15	75KHZ

Table En0818

Serial number	name	meaning
0	Positive logic	Direction positive logic
1	Negative logic	Direction negative logic

Table En0819

Serial number	name	meaning
0	Line Counter	Linear Counting
1	Ring Counter	Cycle Count

Table En081A

Serial number	name	meaning
0	Disable	Turn off comparison
1	Enable	Enable compare function

Table En081B

Serial number	name	meaning
0	Continue counting	Continue counting
1	Hold last value	Keep the current count value
2	Clear last value	Clear count value

13.4 Process Data Definition

Output data meaning(Rw)		
The first channel output data		
Byte0~Byte1	Bit15~bit1	reserve
	bit0	0: Channel 1 stops counting and the original count is reset to zero; 1: Channel 1 starts counting
Byte2~Byte5		Channel 1 pulse comparison value output, range: –2147483648~2147483647
Second channel output data		
Byte6~Byte7	Bit15~bit1	reserve
	bit0	0: Channel 2 stops counting and the original count is cleared; 1: Channel 2 starts counting
Byte8~Byte11		Channel 2 pulse comparison value output, range: –2147483648~2147483647

Input data meaning(Rr)		
First channel input data		
Byte0~Byte1	Bit15~bit5	reserve
	bit3~bit4	0: Channel 1 stops; 1: Channel 1 counts up; 2: Channel 1 counts down
	bit2	0: Channel 1 count value is less than the comparison value; 1: Channel 1 count value is greater than or equal to the comparison value
	bit1	0: No electronic probe/1st channel count reset signal 1: Electronic probe/channel count reset signal

	bit0	0: Channel 1 counting stop state, the original count is cleared; 1: Channel 1 counting state
Byte2~Byte5		Channel 1 pulse input value, range: –2147483648~2147483647
Byte6~Byte9		Channel 1 pulse input latch value, range: –2147483648~2147483647
Second channel input data		
Byte10~Byte 11	Bit15~bit5	Reserved seat
	bit3~bit4	0: Channel 2 stops; 1: Channel 2 counts up; 2: Channel 2 counts down
	bit2	0: Channel 2 count value is less than the comparison value; 1: Channel 2 count value is greater than the equalComparison value
	bit1	0: No electronic probe/channel 2 count reset signal 1: Electronic probe/channel count reset signal
	bit0	0: Channel2Counting stop state, the original count is cleared; 1: Channel2Counting state
Byte12~Byte15		aisle2Pulse input value, range: –2147483648~2147483647
Byte16~Byte19		aisle2Pulse input latch value, range: –2147483648~2147483647

13.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

14 1-channel serial communication module (DF50-M-1COM-232/485/422)

➢ Support 1-way RS485, RS232 or RS422 (choose one from three);

➢ Support Modbus/RTU master, slave and free transparent transmission modes;

➢ Applicable to PLC, inverter, scanner, electric meter, water meter, field measuring equipment and other instruments.

14.1 Specifications

Technical Information	
Product Description	Serial port module, 1 channel, supportsRS232/RS485/RS422
Number of channels	1
Communication Protocol	Modbus RTU master and slave modes; free transparent transmission mode
Baud rate	2400bps~512000bps
Data bits	7bit/8bit
Check digit	None/Even/Odd
Stop bits	1bit/2bit
Diagnosis reporting function configuration	support
Input/output action display	When the input/output signal is valid, the corresponding indicator light flashes
IO process data size	Configurable
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	55mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	730mA
Terminal 24V power output rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal 24V power output rated current	500mA/each power output channel
Terminal 5V power output rated voltage	5V DC (4.75V DC~ 5.25V DC)
Terminal 5V power supply output rated current	500mA/each power output channel
Wiring parameters	
Connection technology	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	Light Gray
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm
Firmware Upgrade	support

14.2 Hardware Interface
14.2.1 Terminal Block Definition
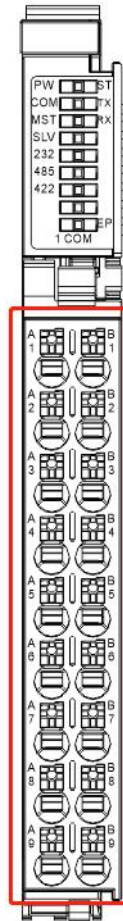
Terminal number	Signal	Terminal number	Signal	illustrate
A1	485/422 TA+	B1	485/422 TB-	RS422/RS485
A2	422 R+	B2	422 R-	RS422
A3	GND	B3	GND	Power Ground
A4	GND	B4	GND	Power Ground
A5	24Vo	B5	GND	Terminal 24V power output
A6	5Vo	B6	GND	Terminal 5V power output
A7	232CTS	B7	232RTS	RS232
A8	232RXD	B8	232TXD	RS232
A9	24V	B9	0V	Terminal power input

14.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus power inputnormal	
	Green Kill:System bus power inputabnormal	
ST	Power-on stage:	Green: Module initialization abnormality,
		Green off: Module initialization is normal
	Operation phase:	Green flash: The internal bus of the module is working normally
		Green off/Green on: The internal bus of the module is working abnormally or the terminal power input is abnormal.
COM	Green: The module is working in free transparent transmission mode	
	Green off: The module is not working in free transparent transmission mode	
MST	Green: The module is working in ModBus master mode	
	Green off: The module is not working in ModBus master mode	
SLV	Green: The module is working in ModBus slave mode	
	Green off: The module is not working in ModBus slave mode	
232	Green: Enable 232 communication interface	
	Green off: 232 communication interface disabled	
485	Green: Enable 485 communication interface	
	Green off: 485 communication interface disabled	
422	Green: Enable the 422 communication interface	

	Green off: 422 communication interface disabled
TX	Green flash: The module is sending data
	Green off: The module does not receive data
RX	Green flash: The module is receiving data
	Green off: The module does not receive data
EP	Green: The terminal power input is normal
	Green off: Terminal power input abnormality

14.2.3 Wiring Diagram
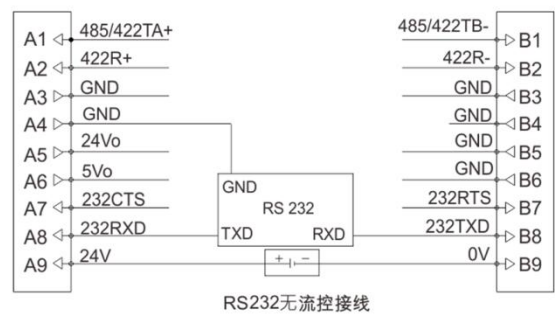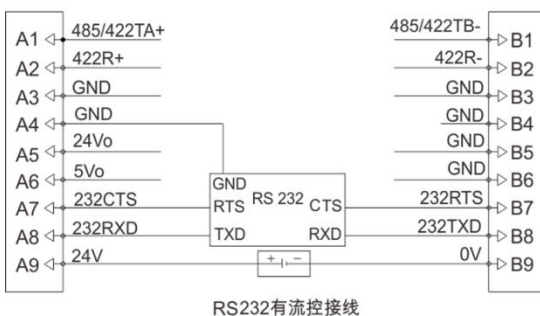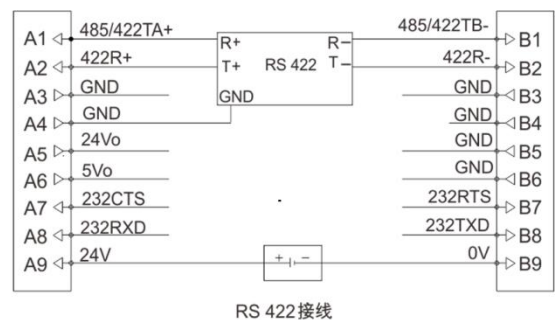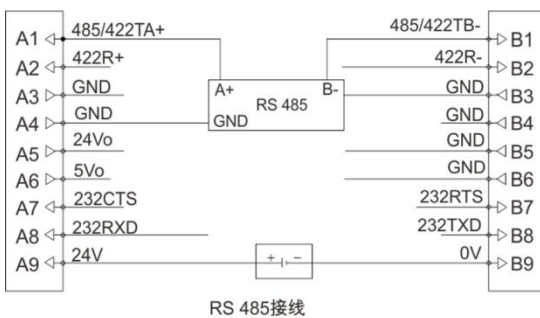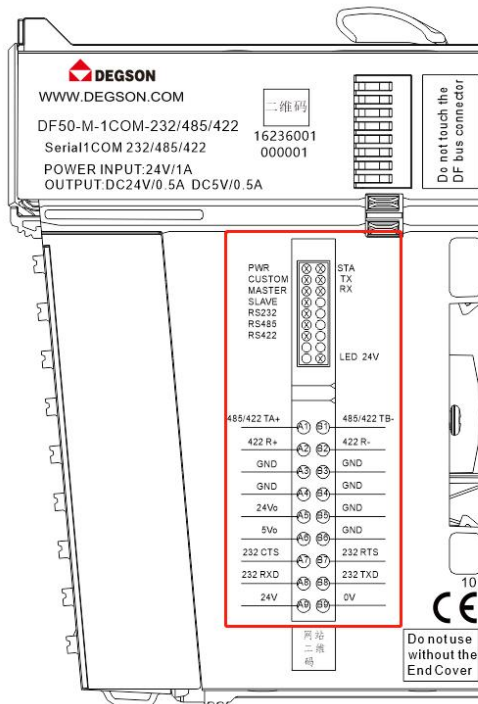
14.3 Configuration Data Definition

name	Value range	default value	meaning
Port Operation Mode	Table A	0	Operation Mode
Port Interface	Table B	2	Interface Type
Port Parity	Table C	0	Check digit
Port Databits	Table D	0	Data bits
Port Stopbit	Table E	0	Stop bits
Port Baudrate	Table F	11	Baud rate
FreeRUN:Interval time (ms)	0~65535	1	Free mode data frame interval
Slave:Slave ID	0~127	1	Slave Mode Slave Mode Address
Slave:Slave Response Delay(ms)	0~65535	0	Slave mode slave response time
Master:Ch0: Slave ID	0~127	0	Channel 0 slave address configuration
Master:Ch0: Event Trigger	Table G	0	Channel 0 trigger mode configuration
Master:Ch0: Lost Action	Table H	0	Channel 0 offline action configuration
Master:Ch0: Operation Code	Table I	16	Channel 0 function code configuration
Master:Ch0: Reg Addr	0~65535	0	Channel 0 register address configuration
Master:Ch0: Reg Num	Register: 0-20 (40 bytes) Number of coils: 0-320 (40 bytes)	0	Channel 0 register quantity configuration
Master:Ch0: Poll Time	100 - 5000ms	500	Channel 0 polling period configuration
Master:Ch0: Poll Delay	0-5000ms	0	Channel 0 interval time configuration
Master:Ch0: Response Timeout	100~5000ms	1000	Channel 0 slave timeout configuration
Master:Ch1: Slave ID	0~127	0	Channel 1 slave address configuration
:			
Master:Ch1: Response Timeout	0~127	0	aisle1SlaveTimeout Configuration
Master:Ch2: Slave ID	0~127	0	aisle2Slave address configuration

:			
Master:Ch2: Response Timeout	0~127	0	aisle2SlaveTimeout Configuration
Master:Ch3: Slave ID	0~127	0	aisle3Slave address configuration
:			
Master:Ch3: Response Timeout	0~127	0	aisle3SlaveTimeout Configuration
Master:Ch4: Slave ID	0~127	0	aisle4Slave address configuration
:			
Master:Ch4: Response Timeout	0~127	0	aisle4SlaveTimeout Configuration
Master:Ch5: Slave ID	0~127	0	aisle5Slave address configuration
:			
Master:Ch5: Response Timeout	0~127	0	aisle5SlaveTimeout Configuration
Master:Ch6: Slave ID	0~127	0	aisle6Slave address configuration
:			
Master:Ch6: Response Timeout	0~127	0	aisle6SlaveTimeout Configuration
Master:Ch7: Slave ID	0~127	0	aisle7Slave address configuration
:			
Master:Ch7: Response Timeout	0~127	0	aisle7SlaveTimeout Configuration

surfaceA

Serial number	name	meaning
0	FreeRUN	Free transparent transmission mode
1	Modbus RTU Master	Master mode
2	Modbus RTU Slave	Slave Mode

surfaceB

Serial number	name	meaning
0	RS232 Flow Off	RS232 mode flow control disabled
1	RS232 Flow On	RS232 mode flow control enabled
2	RS485	RS485 Mode
3	RS422	RS422 Mode

surfaceC

Serial number	name	meaning
0	None	No check digit
1	Odd	Odd Parity
2	Even	Even parity

surfaceD

Serial number	name	meaning
0	8bit	8 data bits
1	7bit	7 data bits

surfaceE

Serial number	name	meaning
0	1bit	1 stop bit
1	2bit	2 stop bits

surfaceF

Serial number	name	meaning
3	2400bps	2400 baud rate
4	4800bps	4800 baud rate
5	9600bps	9600 baud rate
6	14400bps	14400 baud rate
7	19200bps	19200 baud rate
8	38400bps	38400 baud rate
9	56000bps	56000 baud rate
10	57600bps	57600 baud rate
11	115200bps	115200 baud rate
12	128000bps	128000 baud rate
13	230400bps	230400 baud rate
14	256000bps	256000 baud rate
15	460800bps	460800 baud rate
16	500000bps	500000 baud rate
17	512000bps	512000 baud rate

surfaceG

Serial number	name	meaning
0	Poll mode	Polling Mode
1	Trigger	Trigger Mode

surfaceH

Serial number	name	meaning
0	Hold Data	Keep data
1	Clear Data	Clear data

surfaceI

Serial number	name	meaning
1	01 READ COILS	Reading coil
2	02 READ DISCRETE INPUTS	Read discrete quantity
3	03 READ HOLDING REGISTERS	Read Holding Registers

4	04 READ INPUT REGISTERS	Read Input Register
5	05 WRITE SINGLE COIL	Writing a single coil
6	06 WRITE SINGLE HOLDING REGISTER	Writing a single register
7	15 WRITE MULTIPLE COILS	Writing multiple coils
8	16 WRITE MULTIPLE HOLDING REGISTERS	Writing multiple holding registers

14.4 Process Data Definition

➢ Free mode process data definition

Input data(R)			
Name	Type	Size	meaning
StateWord	UINT	2.0	Status word
Input Length	UINT	2.0	Receive data length
Input Count	UINT	2.0	Receive data sequence number
Data In 0	USINT	1.0	Receive data 1
Data In 1	USINT	1.0	Receive data 2
:			
Data In 38	USINT	1.0	Receive data 39
Data In 39	USINT	1.0	Receive data 40

Output data(Rw)			
Name	Type	Size	meaning
CtrlWord	UINT	2.0	Control Word
Output Length	UINT	2.0	Send data length
Output Count	UINT	2.0	Send data sequence number
Data Out 0	USINT	1.0	Send data 1
Data Out 1	USINT	1.0	Send data 2
:			
Data Out 38	USINT	1.0	Send data 39
Data Out 39	USINT	1.0	Send data 40

➢

➢ StateWord contains the following states:

Normal state value	Status Name	meaning
16#0000	OP_SUCCESS	Configuration or write operation successful
16#0001	DATA_FULL	Data has been updated and can be read
16#0002	WRITE_IDLE	Write idle, writable
16#0003	DATA_EMPTY	Read idle, receive data not

Error Status Value	Status Name	meaning
		updated
16#E0A1	WRITE_BUSY	Write busy, can't write
16#E0A2	DATA_LARGE	Data length exceeds limit
16#E0A3	CMD_ERR	Command Error
16#E0A4	PARA_ERR	Configuration parameter error
16#E0A5	CHECK_ERR	Verification Error
16#E0A6	SLAVE_NOEXIT	The slave device does not exist
16#E0A7	PACK_LOSS	Packet Loss
16#E0A8	OVER_FLOW	Data overflow

➢ Note: Each time the coupler restarts the state machine, it will automatically send the CONFIGUREPORT command to configure the serial port module. After the configuration is successful, the serial port module automatically enters the READCUSTOM state and feedbacks the StateWord state as 16#0003. The free mode read and write switching can be achieved through the control word CtrlWord. In situations where continuous reading and writing are required, the PLC can periodically switch CtrlWord to write command 16#00C1 and read command 16#00C2 to achieve this. Whether the reading and writing are successful can be judged by StateWord or combined with InputCount.

➢ Slave mode process data definition

Input data(Rr)			
Name	Type	Size	meaning
StateWord	UINT	2.0	Status word
Read Data Length	USINT	1.0	Readback data length Byte
Reserve 1	USINT	1.0	reserve
SlaveRegNum	UINT	2.0	Readback register quantity
Data In 0	UINT	2.0	Receive data 1
Data In 1	UINT	2.0	Receive data 2
:			
Data In 18	UINT	2.0	Receive data 19
Data In 19	UINT	2.0	Receive data 20

Output data(Rw)			
Name	Type	Size	meaning
CtrlWord	UINT	2.0	Control Word
SlaveCMD	USINT	1.0	Slave operation commands

SlaveRegAddr	USINT	1.0	Slave register address
SlaveRegNum	UINT	2.0	Number of slave registers
Data Out 0	UINT	2.0	Send data 1
Data Out 1	UINT	2.0	Send data 2
:			
Data Out 18	UINT	2.0	Send data 19
Data Out 19	UINT	2.0	Send data 20

➢ Master mode process data definition

Input data(Rr)			
Name	Type	Size	meaning
StateWord	UINT	2.0	Status word
Read Data Length	UINT	2.0	Receive data length
Active Channel	UINT	2.0	Current active channels
Data In 0	UINT	2.0	Receive data 1
Data In 1	UINT	2.0	Receive data 2
:			
Data In 18	UINT	2.0	Receive data 19
Data In 19	UINT	2.0	Receive data 20

Output data(Rw)			
Name	Type	Size	meaning
CtrlWord	UINT	2.0	Control Word
Reserve	UINT	2.0	reserve
Select Channel	UINT	2.0	Channel operation selection
Data Out 0	UINT	2.0	Transmitter data 1
Data Out 1	UINT	2.0	Transmitter data 2
:			
Data Out 18	UINT	2.0	Transmitter data 19
Data Out 19	UINT	2.0	Transmitter data 20

14.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
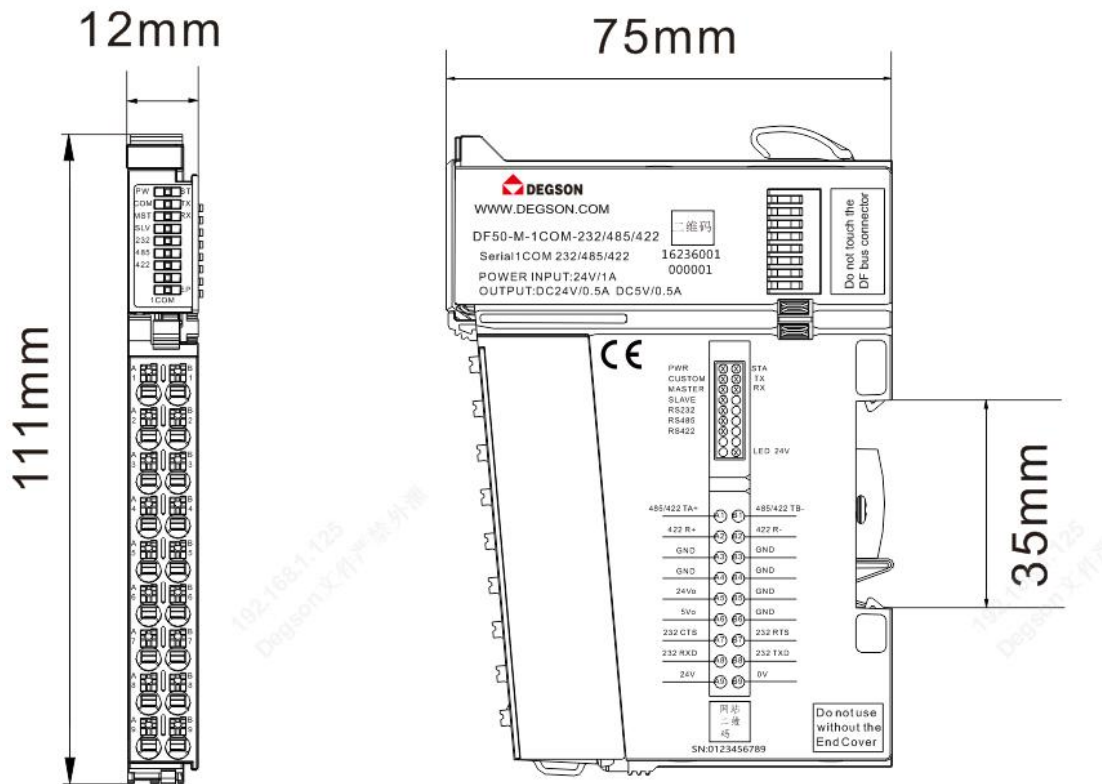
15 16 channels/24VDC/voltage distribution (DF50-M-DC-U-24)

➢ Independent of fieldbus application and connection type.

➢ Provides 16 channels of 24VDC rated voltage to the external field.

➢ Protection grade IP20.

15.1 Specifications

Technical Information	
Product Description	Voltage distribution module, 16 channels, 24V
Number of channels	16
Operating voltage	24VDC (-15%~+20%) through power jumper contacts
Provide on-site voltage	24VDC (-15%~+20%)
Provides the maximum current on site	8A
Number of input power jumper contacts	2
Number of external power jumper contacts	2
Wiring parameters	
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m
Relative humidity (non-condensing)	5~95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

15.2 Hardware Interface
15.2.1 WiringTerminal Definition
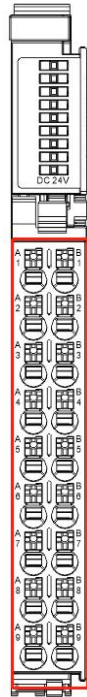
Terminal number		Signal	illustrate
A1	B1	On-site power supply 24VDC	Provides 16 channels of 24VDC rated voltage for external loads
A2	B2		
A3	B3		
A4	B4		
A5	B5		
A6	B6		
A7	B7		
A8	B8		
A9	B9	External voltage input 24VDC	External 24VDC voltage input jumper contacts

15.2.2 Wiring Diagram
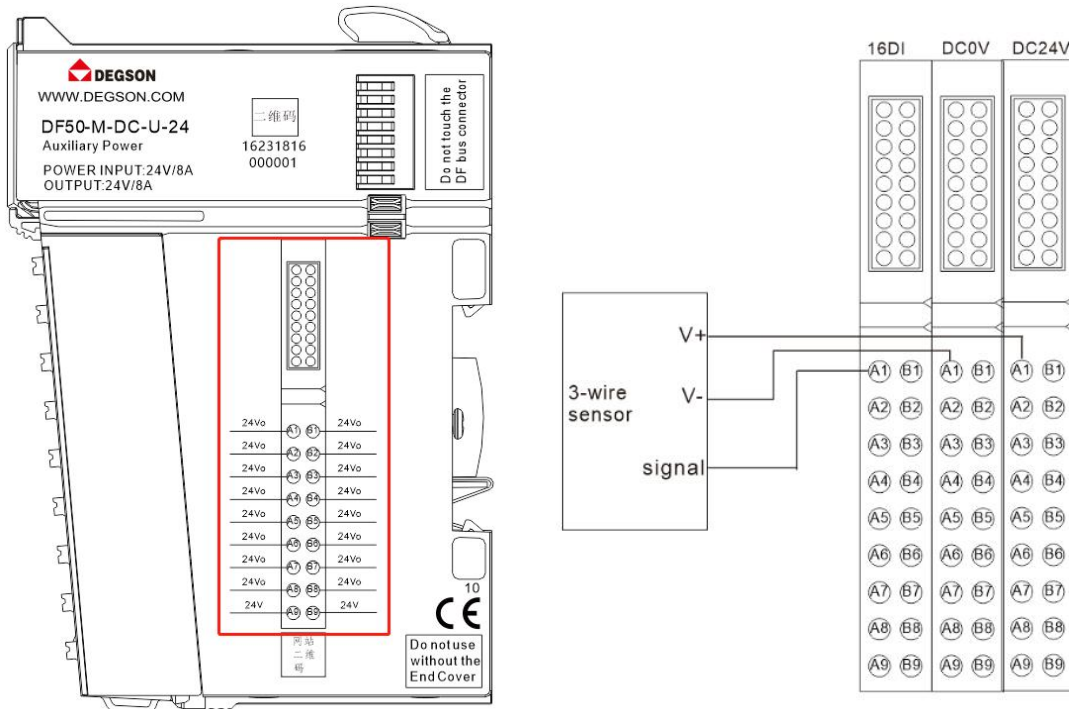
Note: Each of the 16 channels can provide a 24VDC rated voltage to the external load. A9/B9 provides 24VDC externally.

15.3 Mechanical Installation

InstallSize letterinterestAs shown in the figure below, the unit is (mm）:

24VDCVoltageAssignment Module
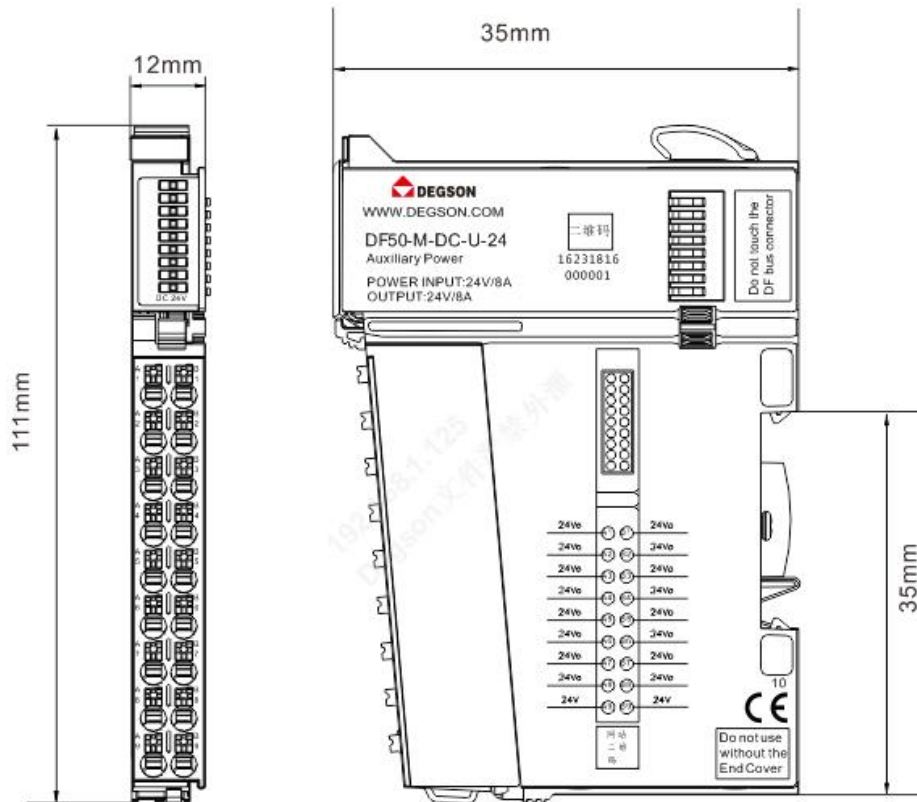
16 16 channels/0VDC/voltage distribution (DF50-M-DC-U-0)

➢ Independent of fieldbus application and connection type.

➢ Provides 16 channels of 0VDC rated voltage for external fields.

➢ Protection grade IP20.
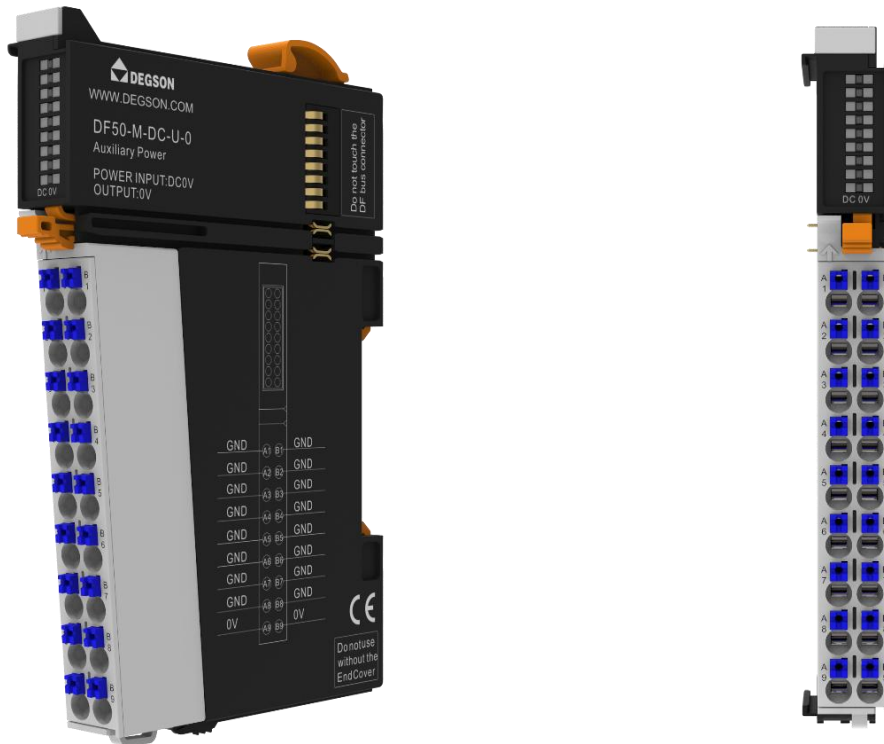
16.1 Specifications

Technical Information	
Product Description	Voltage distribution module, 16 channels, 0V
Number of channels	16
Operating voltage	0VDC (-15% to +20%) through power jumper contacts
Provide on-site voltage	0VDC (-15%～+20%)
Provides the maximum current on site	8A
Number of input power jumper contacts	2
Number of external power jumper contacts	2
Wiring parameters	
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60°C
Permissible ambient temperature (storage)	-40～85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at	10ppm
Permissible SO2 pollutant concentration at 75%	25ppm

16.2 Hardware Interface

16.2.1 WiringTerminal Definition
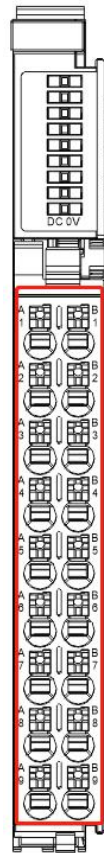
Terminal number		Signal	illustrate
A1	B1	On-site power supply 0VDC	Provides 16 channels of 0VDC rated voltage for external loads
A2	B2		
A3	B3		
A4	B4		
A5	B5		
A6	B6		
A7	B7		
A8	B8		
A9	B9	External voltage input 0VDC	External 0VDC voltage input jumper contacts

16.2.2 Wiring Diagram
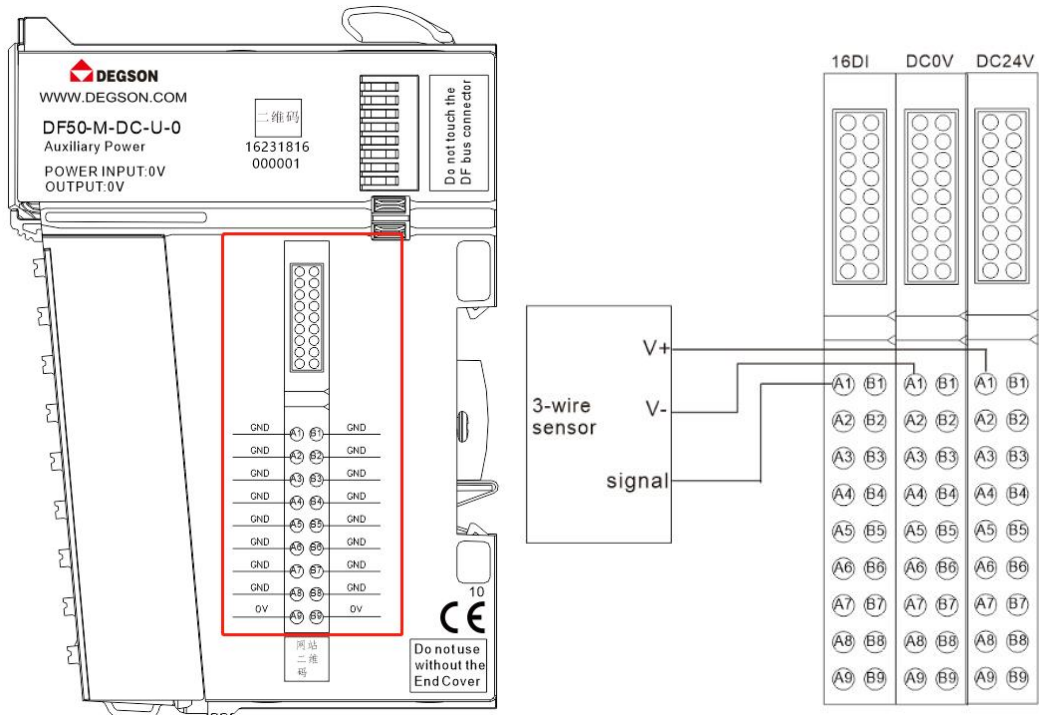
Note: Each of the 16 channels can provide a 0VDC rated voltage to an external load. A9/B9 provides 0VDC externally.

16.3 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
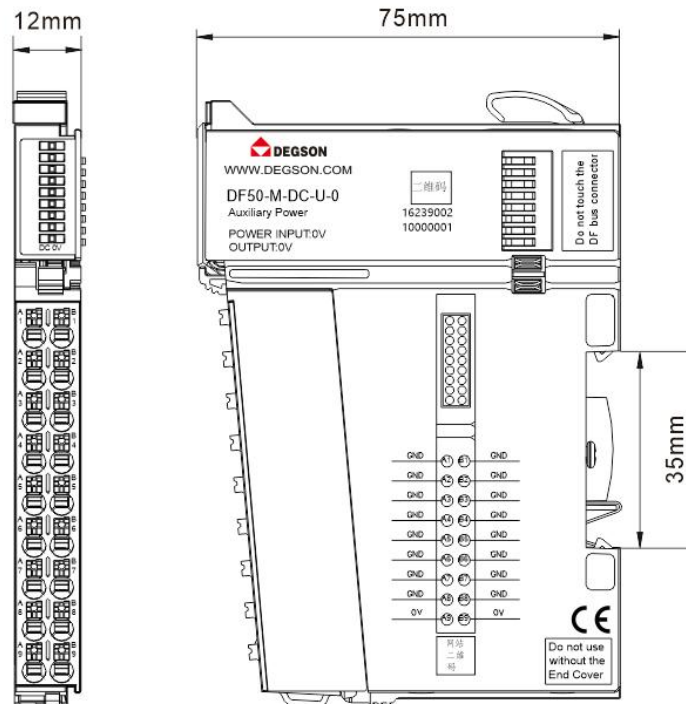
17 4-channel relay output/24VDC (DF50-M-4DOR)

➢ 4-channel digital output.

➢ Each output channel has an LED indicator.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.
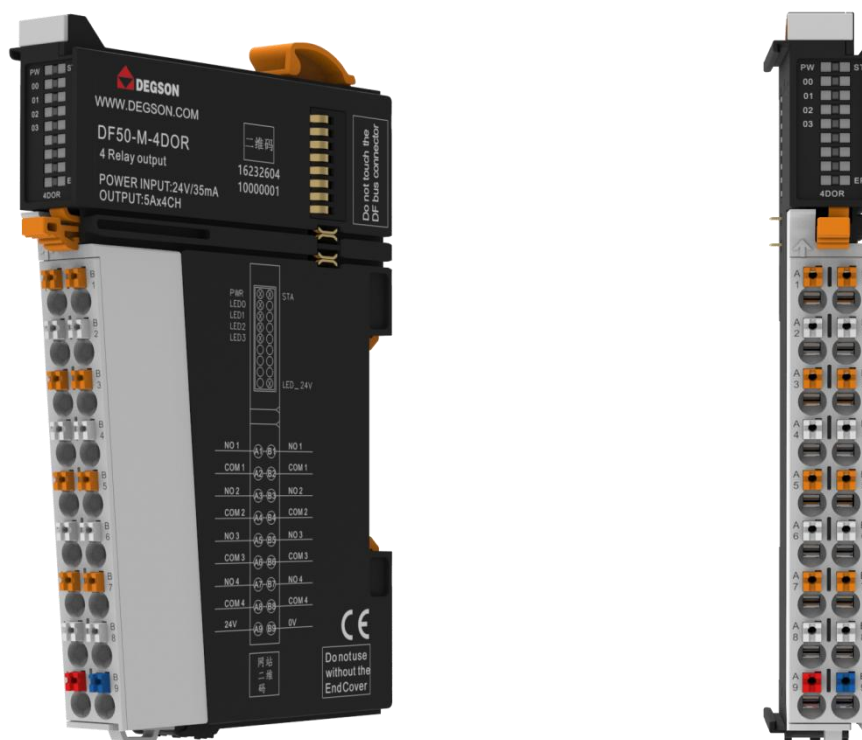
17.1 Specifications

Technical Information	
Product Description	Relay output module, 4 outputs
Number of channels	4
Contact Type	NO contact
Maximum output current	Maximum output current of single channel: 5A
	Module output maximum current: 20A
Maximum switching voltage	250VAC/30VDC
Reverse circuit protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Module error diagnosis	Yes
Switching frequency	30Hz
Response time of protection circuit	< 100μs
Leakage Current	Maximum value: 0uA
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical 125℃
Load Type	Resistive (5A/point, 20A/module)
Output action display	When the output is in driving state, the indicator light is on.
IO Mapping	Support bit-mapped mode
Fault shutdown output status mode	Clear to zero, keep current value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	30mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	50mA
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60℃
Permissible ambient temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards

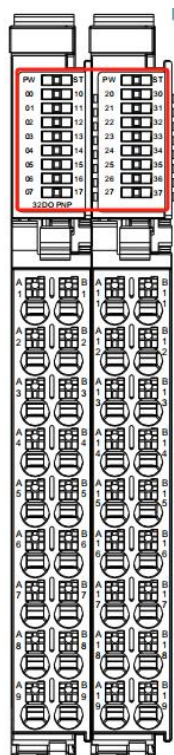| Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

## 17.2 Hardware Interface
17.2.1 Terminal Block Definition
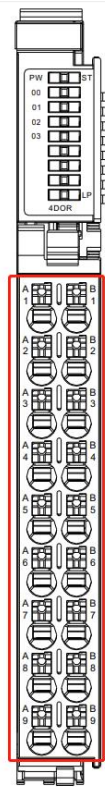
Terminal number	Signal	Terminal number	Signal	illustrate
A1	CH1 contact 1	B1	CH1 contact 1	CH1 relay interface 1
A2	CH1 contact 2	B2	CH1 contact 2	CH1 relay interface 2
A3	CH2 contact 1	B3	CH2 contact 1	CH2 relay interface 1
A4	CH2 contact 2	B4	CH2 contact 2	CH2 relay interface 2
A5	CH3 contact 1	B5	CH3 contact 1	CH3 relay interface 1
A6	CH3 contact 2	B6	CH3 contact 2	CH3 relay interface 2
A7	CH4 contact 1	B7	CH4 contact 1	CH4 relay interface 1
A8	CH4 contact 2	B8	CH4 contact 2	CH4 relay interface 2
A9	24V	B9	0V	Terminal power input

17.2.2 LED indicator definition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
LP	Green: 24V module power supply is normal		
	Green off: 24V module power supply is abnormal		
00～03	Green: Relay closed		
	Green off: relay disconnected		

17.2.3 Wiring Diagram
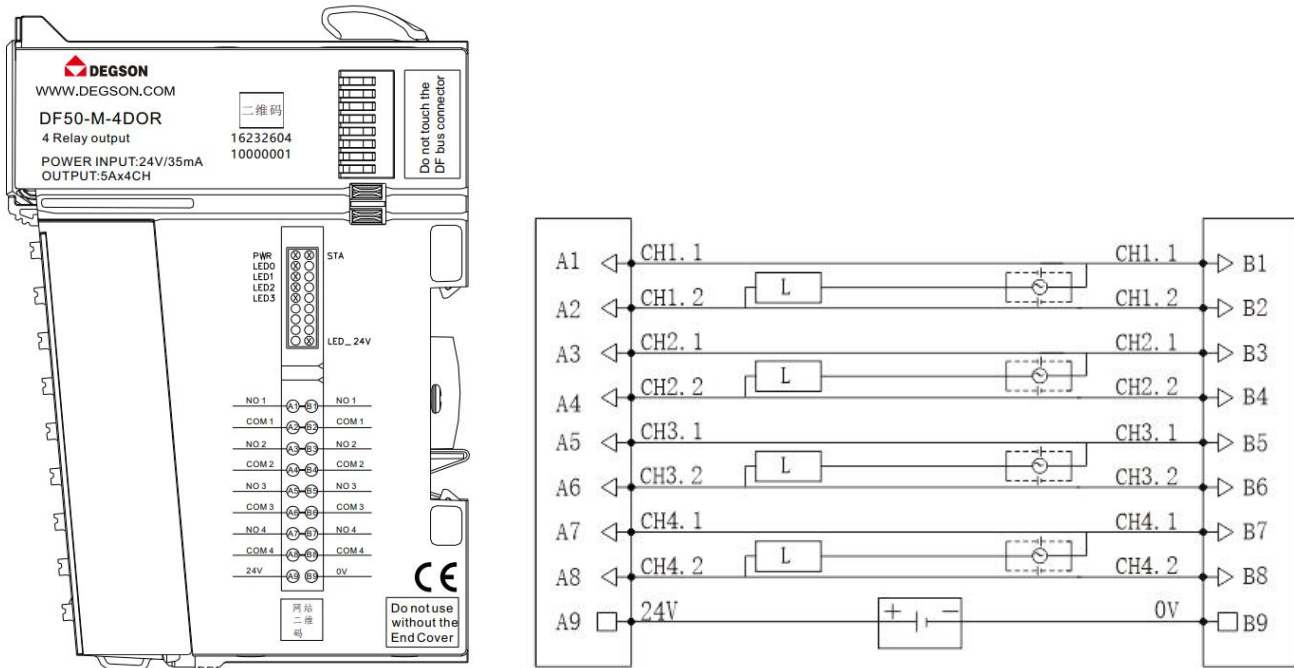
Note: A9, B9 24V power supply is provided externally.

17.3 Process Data Definition

DF50-M-4DOR ModulesProcess data definition

Output Data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved	Reserved	Reserved	Reserved	DO 3	DO 2	DO 1	DO 0

Data description:

CH1~CH4: When this position is 1, the corresponding channel output signal is valid and the channel relay is energized. When this position is 0, the corresponding channel output signal is invalid and the relay is disconnected.

0: Output signal is invalid

1: Output signal is valid

17.4 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
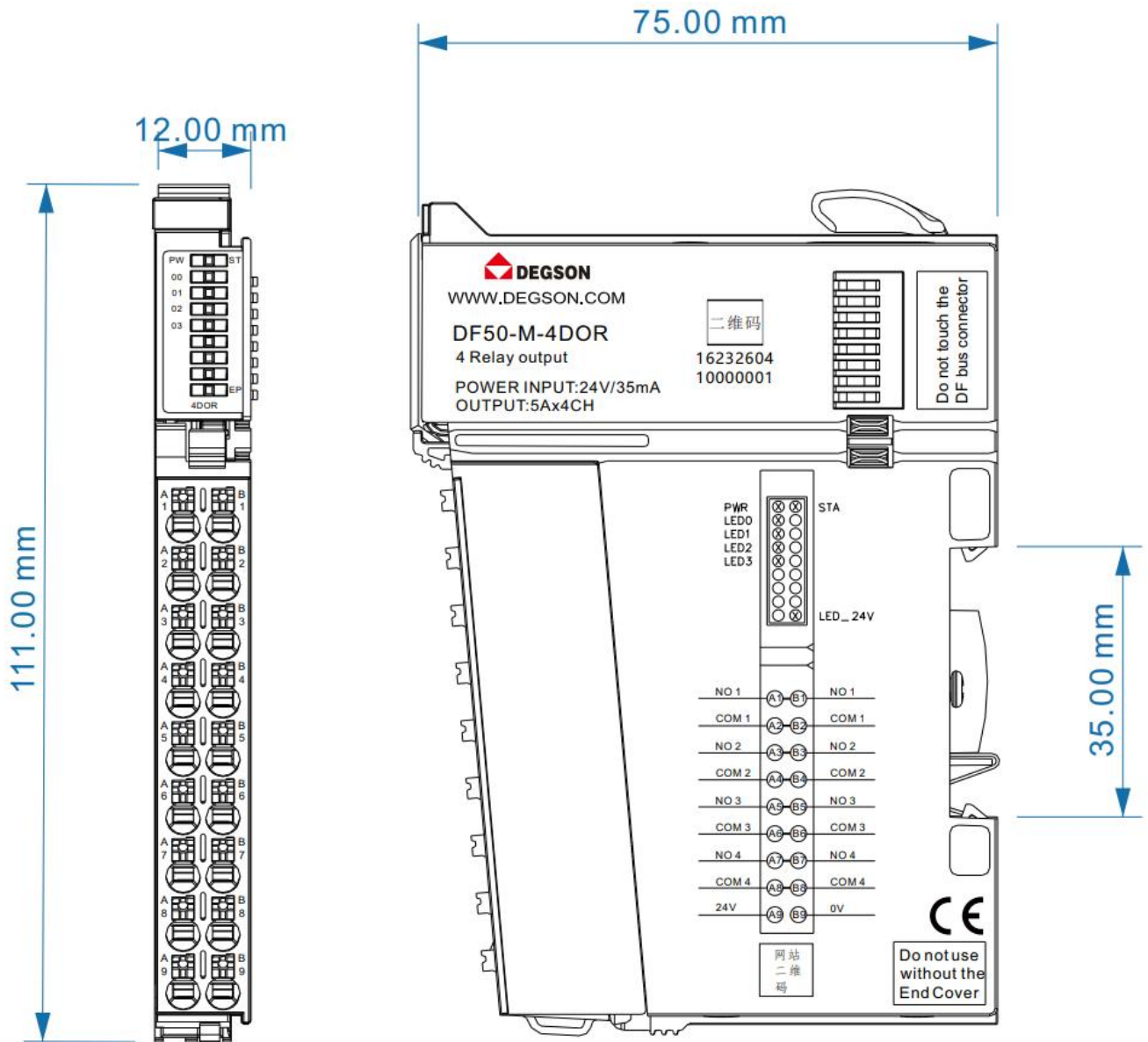
18 4-channel digital output/24VDC/PNP (DF50-M-4DO-P-2A)

- ➢ 4-channel digital output.
- ➢ Each output channel has an LED indicator.
- ➢ The field layer and the system layer are isolated by photocouplers.
- ➢ Protection grade IP20.

18.1 Specifications

Technical Information	
Product Description	Digital output modules,4Output,PNP, 24VDC
Number of channels	4
Signal Type	PNP
"OFF" signal voltage	High impedance
"ON" signal voltage	twenty fourV DC
Data size	1Byte
Connection Type	1-wire
Reverse circuit protection	Yes
Overcurrent protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	Yes
Switching frequency (resistive)	100Hz
Switching frequency (lamp)	10Hz
Switching frequency (inductive)	0.2Hz
Response time of protection circuit	< 100μs
Maximum output current per channel	2A
Leakage Current	Maximum value:0.18uA
Hardware response time	100us/100us
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical value 135°C Overcurrent protection:4A. Typical value2A Support short circuit protection
Load Type	Inductive (7.2W/point, 24W/module), Resistive (0.5A/point, 4A/module), Light (5W/point, 18W/module)
Output action display	When the output is in driving state, the indicator light is on.
Input derating	When working at 55°C, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10°C when all output points are ON
IO Mapping	Support bit-mapped mode
Fault shutdown output status mode	Clear to zero, keep current value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	100mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	8A
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60°C
Permissible ambient temperature (storage)	-40～85°C
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard

Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

18.2 Hardware Interface

18.2.1wiringTerminal Definition
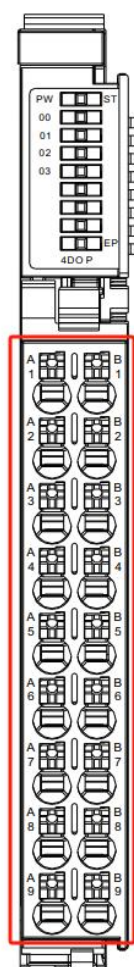
Terminal number	Signal	Terminal number	Signal	illustrate
A1	DO 1	B1	DO 1	DO1 signal output
A2	GND	B2	GND	
A3	DO 2	B3	DO 2	DO2 signal output
A4	GND	B4	GND	
A5	DO 3	B5	DO 3	DO3 signal output

4-channel digital output

A6	GND	B6	GND	
A7	DO 4	B7	DO 4	DO4 signal output
A8	GND	B8	GND	
A9	24V	B9	0V	Terminal power input

18.2.2 LED Indicatorsdefinition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
EP	Green: 24V module power supply is normal		
	Green off: 24V module power supply is abnormal		
00～03	Green: Output signal is valid		
	Green off: Output signal is invalid		

4-channel digital output

18.2.3 Wiring Diagram
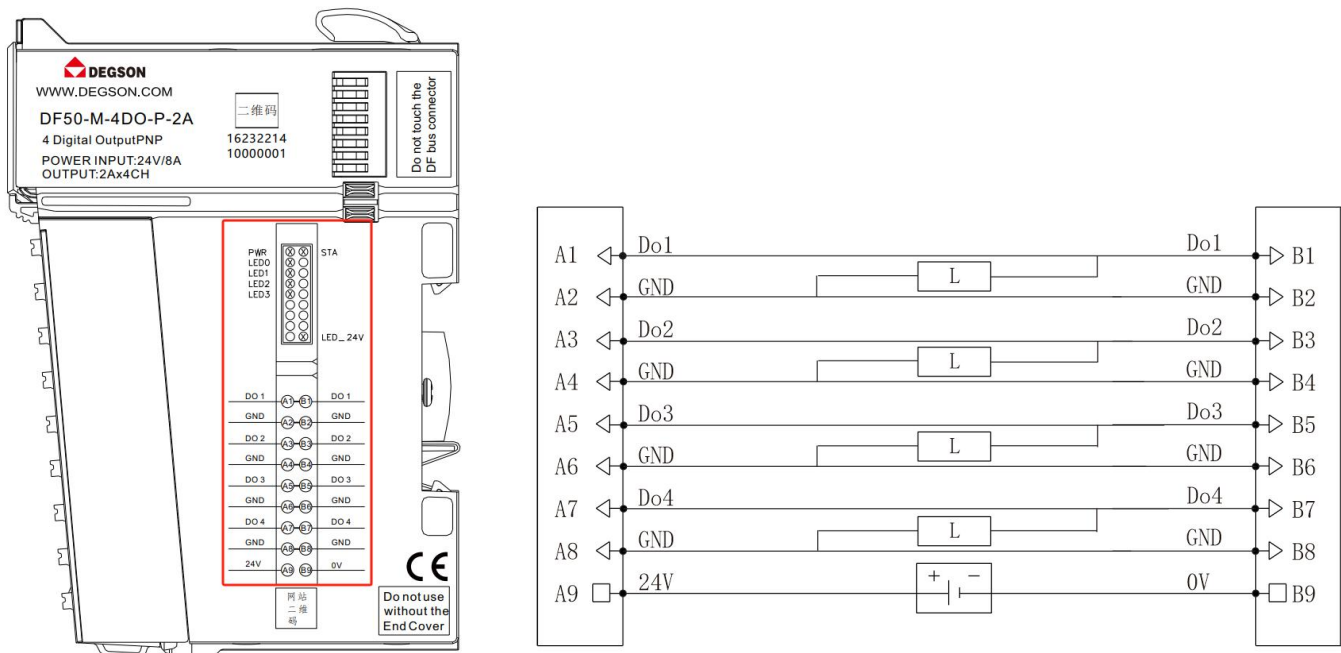
Note: A9, B9   The 24V power supply is provided externally.

18.4 Process Data Definition

DF50-M-4DO-P-2A moduleProcess data definition

Output Data							
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved	Reserved	Reserved	Reserved	DO 3	DO 2	DO 1	DO 0
Input Data							
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Reserved	Reserved	Reserved	Reserved	Overcurrent3	Overcurrent2	Overcurrent1	Overcurrent0

18.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

4-channel digital output
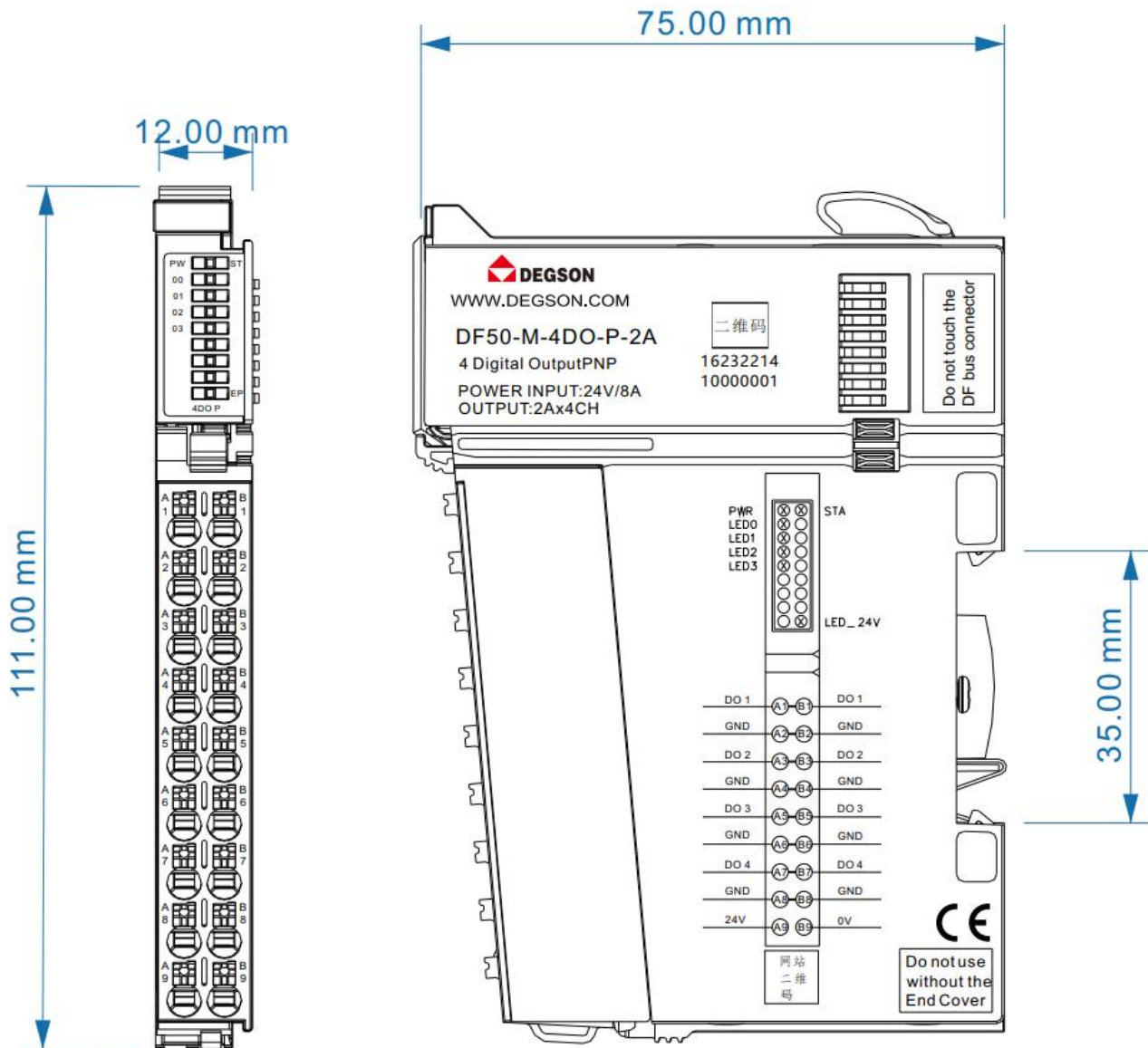
19 32-channel digital output/24VDC/NPN (DF50-M-32DO-N)

➢ 32Channel digital output,NPN LowThe level is valid.

➢ Each output channel has an LED indicator.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.
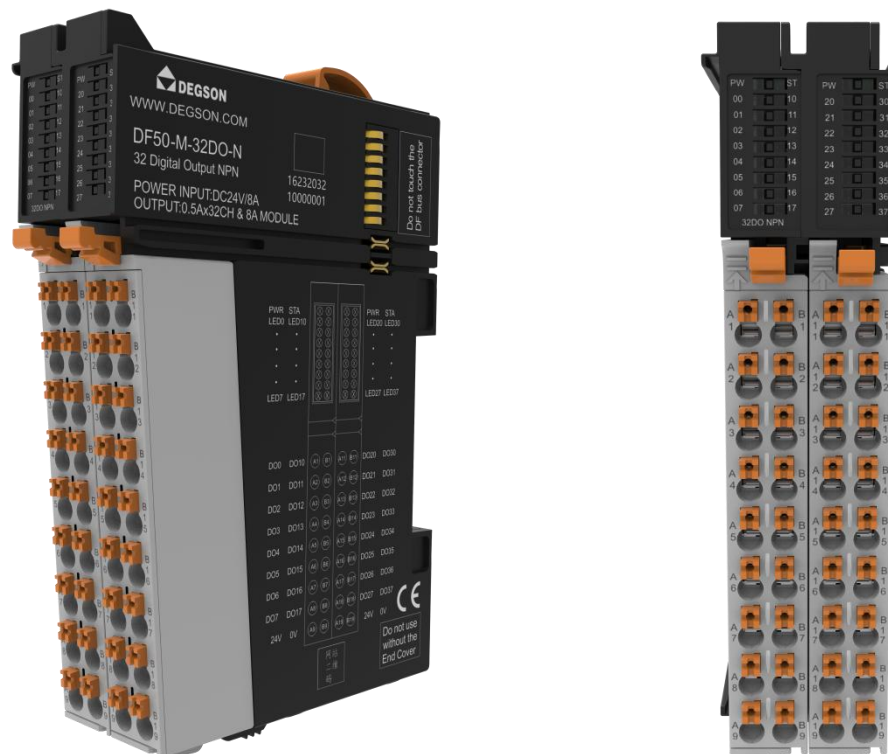
19.1 Specifications

Technical Information	
Product Description	Digital output modules,32Output,NPN, 24VDC
Number of channels	32
Signal Type	NPN
"OFF" signal voltage	High impedance
"ON" signal voltage	0V DC
Data size	4Byte
Connection Type	1-wire
Reverse circuit protection	Yes
Overcurrent protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	Yes
Switching frequency (resistive)	100Hz
Switching frequency (lamp)	10Hz
Switching frequency (inductive)	0.2Hz
Response time of protection circuit	< 100μs
Maximum output current per channel	500 mA
Leakage Current	Maximum value: 10uA
Hardware response time	100us/100us
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical value 135℃ Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type	0.5A/point,8A/Module
Output action display	When the output is in driving state, the indicator light is on.
Input derating	When working at 55℃, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10℃ when all output points are ON
IO Mapping	Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode	Clear, keep current value or output according to preset value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	200mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	8A
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m

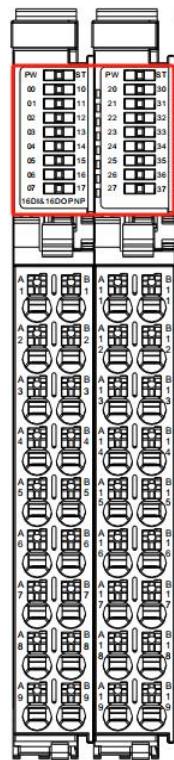| Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

19.2 Hardware Interface
19.2.1 Terminal Block Definition

Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	illustrate
A1	DO0	B1	DO10	C1	DO 20	D1	DO 30	DOSignal inputout
A2	DO1	B2	DO11	C2	DO 21	D2	DO 31	
A3	DO2	B3	DO12	C3	DO 22	D3	DO 32	
A4	DO3	B4	DO13	C4	DO 23	D4	DO 33	
A5	DO4	B5	DO14	C5	DO 24	D5	DO 34	
A6	DO5	B6	DO15	C6	DO 25	D6	DO 35	
A7	DO6	B7	DO16	C7	DO 26	D7	DO 36	
A8	DO7	B8	DO17	C8	DO 27	D8	DO 37	
A9	24V	B9	0V	C9	24V	D9	0V	Terminal power input

4-channel digital output

19.2.2 LED indicator definition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
00～07,10～17	Green: Output signal is valid		
20～27,30～37	Green off: Output signal is invalid		

4-channel digital output

19.2.3 Wiring Diagram

19.4 Process Data Definition
DF50-M-32DO-N moduleProcess data definition

Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0
Byte 1	DO17	DO16	DO15	DO14	DO13	DO12	DO11	DO10
Byte 2	DO 27	DO 26	DO 25	DO 24	DO 23	DO 22	DO 21	DO 20
Byte 3	DO 37	DO 36	DO 35	DO 34	DO 33	DO 32	DO 31	DO 30

The top row of the table is a header spanning all columns labeled "Output Data".

4-channel digital output

19.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

20 32-channel digital output/24VDC/PNP (DF50-M-32DO-P)

➢ 32Channel digital output,PNP HighThe level is valid.

➢ Each output channel has an LED indicator.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.
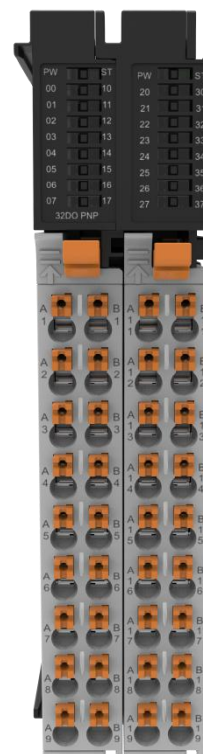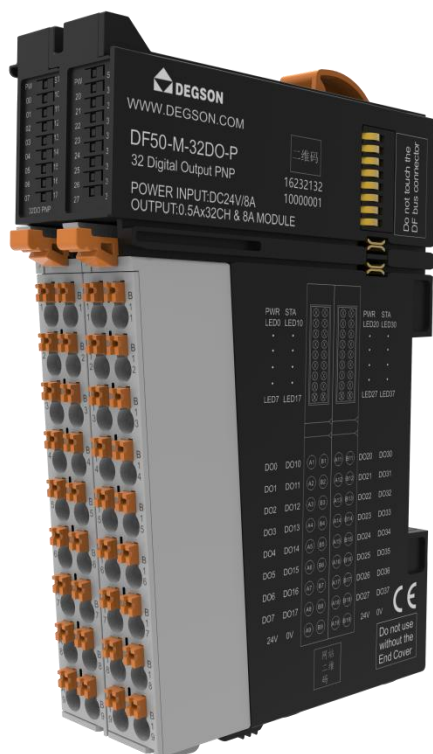
20.1 Specifications

Technical Information	
Product Description	Digital output modules,32Output,PNP, 24VDC
Number of channels	32
Signal Type	PNP
"OFF" signal voltage	High impedance
"ON" signal voltage	twenty fourV DC
Data size	4Byte
Connection Type	1-wire
Reverse circuit protection	Yes
Overcurrent protection	Yes
Short circuit protection	Yes
Isolation method	Photoelectric isolation from the field layer
Error diagnosis	Yes
Switching frequency (resistive)	100Hz
Switching frequency (lamp)	10Hz
Switching frequency (inductive)	0.2Hz
Response time of protection circuit	< 100μs
Maximum output current per channel	500 mA
Leakage Current	Maximum value: 10uA
Hardware response time	100us/100us
Output Impedance	<200mΩ
Output delay	OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function	Over temperature shutdown: typical value 135℃ Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type	0.5A/point,8A/Module
Output action display	When the output is in driving state, the indicator light is on.
Input derating	When working at 55℃, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10℃ when all output points are ON
IO Mapping	Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode	Clear, keep current value or output according to preset value
In stop mode	In the fault shutdown mode, no more refresh
Power parameters	
System bus input power rated voltage	5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current	200mA
Terminal power input rated voltage	24V DC (20.4V DC~ 28.8V DC)
Terminal power input rated current	8A
Wiring parameters	
Connection technology: Output	PUSH-IN Terminal Blocks
Wire crimping area	0.2~1.5mm2/26~16AWG
Stripping length	8~10mm
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0~2000m

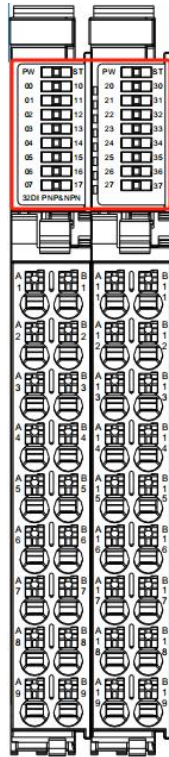| Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

16-channel digital input & 16-channel digital output/24VDC/PNP

20.2 Hardware Interface
20.2.1 Terminal Block Definition

Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	illustrate
A1	DO0	B1	DO10	C1	DO 20	D1	DO 30	DOSignal inputout
A2	DO1	B2	DO11	C2	DO 21	D2	DO 31	
A3	DO2	B3	DO12	C3	DO 22	D3	DO 32	
A4	DO3	B4	DO13	C4	DO 23	D4	DO 33	
A5	DO4	B5	DO14	C5	DO 24	D5	DO 34	
A6	DO5	B6	DO15	C6	DO 25	D6	DO 35	
A7	DO6	B7	DO16	C7	DO 26	D7	DO 36	
A8	DO7	B8	DO17	C8	DO 27	D8	DO 37	
A9	24V	B9	0V	C9	24V	D9	0V	Terminal power input

16-channel digital input & 16-channel digital output/24VDC/PNP

20.2.2 LED indicator definition

Indicator Lights	meaning		
PW	Green:System bus power inputnormal		
	Green Kill:System bus power inputabnormal		
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off/green on: The internal bus of the module is working abnormally or the terminal power input is abnormal	
00～07,10～17	Green: Output signal is valid		
20～27,30～37	Green off: Output signal is invalid		

20.2.3 Wiring Diagram

16-channel digital input & 16-channel digital output/24VDC/PNP
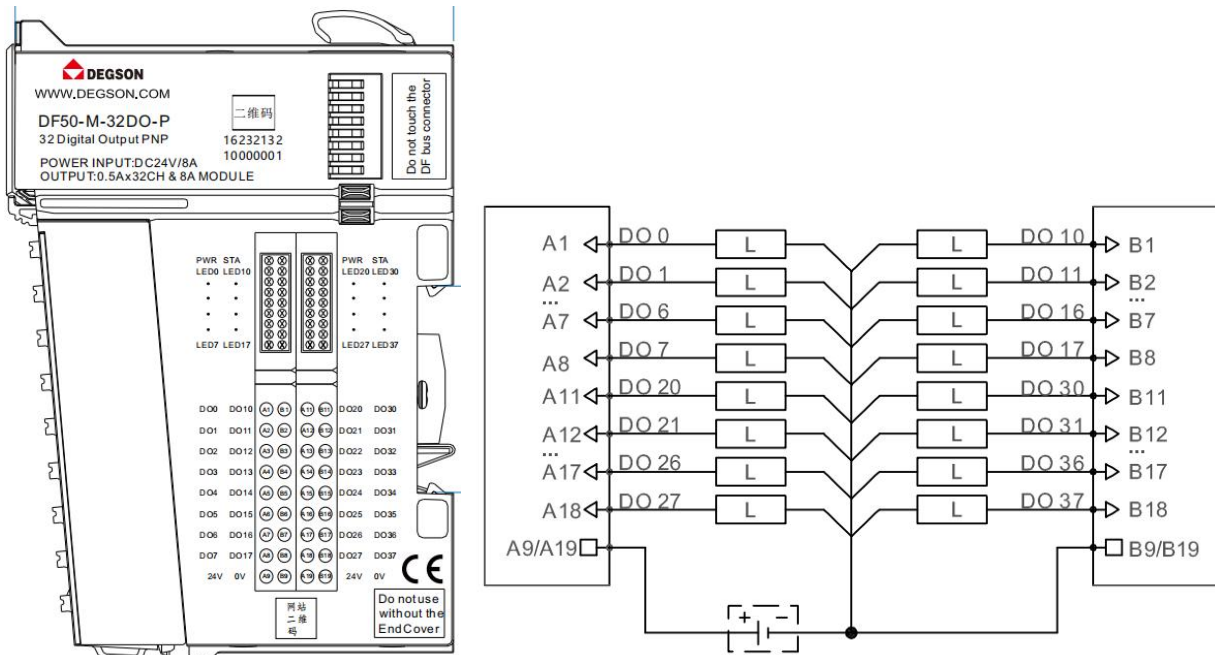
20.4 Process Data Definition
DF50-M-32DO-P moduleProcess data definition

Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO7	DO6	DO5	DO4	DO3	DO2	DO1	DO0
Byte 1	DO17	DO16	DO15	DO14	DO13	DO12	DO11	DO10
Byte 2	DO 27	DO 26	DO 25	DO 24	DO 23	DO 22	DO 21	DO 20
Byte 3	DO 37	DO 36	DO 35	DO 34	DO 33	DO 32	DO 31	DO 30

(Output Data)

16-channel digital input & 16-channel digital output/24VDC/PNP

20.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

21 16-channel digital input & 16-channel digital output / 24VDC / NPN (DF50-M-16DI-16DO-N)

➤ The digital quantityThe module supports 16-channel input and 16-channel output, NPN low level is effective.

➤ Each input module is equipped with an anti-interference filter.

➤ Each inputOutputAll modules have LED indicators.

➤ The field layer and the system layer are isolated by photocouplers.

➤ Protection grade IP20.

21.1 Specifications

Technical Information		
Product Description		Digital inputOutputModules,16enter+16 output, NPN, 24VDC
Number of channels		16enter+16 output
Signal Type		NPN
Input channel parameters		
Signal range	"ON" signal voltage	Voltage difference > 11VDC (voltage difference with common input)
	"OFF" signal voltage	Voltage difference <5VDC (voltage difference with common input)
Hardware response time		200us/200us
Data size		4Byte
Connection Type		1-wire, Type 1/Type 3, according to IEC 61131-2
Reverse circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Filter time		0~40ms configurable
Input Impedance		>7.5kΩ
Input Action Display		When the input is in driving state, the input indicator light is on.
IO Mapping		Support bit-by-bit or word-by-word mapping
Output channel parameters		
"OFF" signal voltage		High impedance
"ON" signal voltage		0V DC
Data size		2 Byte
Connection Type		1-wire
Reverse circuit protection		Yes
Overcurrent protection		Yes
Short circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Switching frequency (resistive)		100Hz
Switching frequency (lamp)		10Hz
Switching frequency (inductive)		0.2Hz
Response time of protection circuit		< 100μs
Maximum output current per channel		500 mA
Leakage Current		Maximum value: 10uA
Hardware response time		100us/100us
Output Impedance		<200mΩ
Output delay		OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function		Over temperature shutdown: typical value 135℃ Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type		Inductive (7.2W/point, 24W/module), Resistive (0.5A/point, 4A/module), Light (5W/point, 18W/module)
Output action display		When the output is in driving state, the indicator light is on.
Input derating		When working at 55℃, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10℃ when all output points are ON
IO Mapping		Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode		Clear, keep current value or output according to preset value
In stop mode		In the fault shutdown mode, no more refresh
Power parameters		
System bus input power rated voltage		5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current		145mA
Input ChannelsTerminal power supply (common terminal) input voltage	NPN signal type	24V
	PNP signal type	0V
Wiring parameters		

Connection technology: Input	PUSH-IN Terminal Blocks
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm²
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60℃
Permissible ambient temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

21.2 Hardware Interface
21.2.1 Terminal Block Definition

Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	illustrate
A1	DI 0	B1	DI 10	C1	DO 20	D1	DO 30	DI signal input:
A2	DI 1	B2	DI 11	C2	DO 21	D2	DO 31	A1~B9

16-channel digital input & 16-channel digital output/24VDC/PNP

A3	DI 2	B3	DI 12	C3	DO 22	D3	DO 32	DO signal output: C1~D9
A4	DI 3	B4	DI 13	C4	DO 23	D4	DO 33	
A5	DI 4	B5	DI 14	C5	DO 24	D5	DO 34	
A6	DI 5	B6	DI 15	C6	DO 25	D6	DO 35	
A7	DI 6	B7	DI 16	C7	DO 26	D7	DO 36	
A8	DI 7	B8	DI 17	C8	DO 27	D8	DO 37	
A9	COM	B9	COM	C9	24V	D9	0V	Public

21.2.2 LED indicator definition

Indicator Lights		meaning	
PW		Green:System bus power inputnormal	
		Green Kill:System bus power inputabnormal	
ST	Power-on stage	Green: Module initialization error	
		Green off: Module initialization is normal	
	Operational stage	Green flash: The internal bus of the module is working normally	
		Green off: The internal bus of the module is working abnormally	
00～07,10～17		Green: Input signal is valid	
		Green off: Input signal is invalid	
20～27,30～37		Green: Output signal is valid	
		Green off: Output signal is invalid	

16-channel digital input & 16-channel digital output/24VDC/PNP

21.2.3 Wiring Diagram

Note: COM is the common terminal, external 24V is used to realize NPN, external 0V is used to realize PNP.

21.4 Process Data Definition

DF50-M-16DI-16DO-N moduleProcess data definition

Input Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
Byte 1	DI17	DI16	DI15	DI14	DI13	DI12	DI11	DI10

Output Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 2	DO 27	DO 26	DO 25	DO 24	DO 23	DO 22	DO 21	DO 20
Byte 3	DO 37	DO 36	DO 35	DO 34	DO 33	DO 32	DO 31	DO 30

16-channel digital input & 16-channel digital output/24VDC/PNP

21.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

22 16-channel digital input & 16-channel digital output / 24VDC / PNP (DF50-M-16DI-16DO-P)

➢ The digital quantityThe module supports 16-channel input and 16-channel output, PNP high level is effective.

➢ Each input module is equipped with an anti-interference filter.

➢ Each inputOutputAll modules have LED indicators.

➢ The field layer and the system layer are isolated by photocouplers.

➢ Protection grade IP20.

22.1 Specifications

Technical Information	
Product Description	Digital inputOutputModules,16enter+16 output,PNP, 24VDC
Number of channels	16enter+16 output
Signal Type	PNP
Input channel parameters	
Signal range	"ON" signal voltage	Voltage difference > 11VDC (voltage difference with common input)

	"ON" signal voltage	Voltage difference > 11VDC (voltage difference with common input)
Signal range	"OFF" signal voltage	Voltage difference <5VDC (voltage difference with common input)
Hardware response time		200us/200us
Data size		4Byte
Connection Type		1-wire, Type 1/Type 3, according to IEC 61131-2
Reverse circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Filter time		0~40ms configurable
Input Impedance		>7.5kΩ
Input Action Display		When the input is in driving state, the input indicator light is on.
IO Mapping		Support bit-by-bit or word-by-word mapping
Output channel parameters		
"OFF" signal voltage		High impedance
"ON" signal voltage		twenty fourV DC
Data size		2 Byte
Connection Type		1-wire
Reverse circuit protection		Yes
Overcurrent protection		Yes
Short circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Switching frequency (resistive)		100Hz
Switching frequency (lamp)		10Hz
Switching frequency (inductive)		0.2Hz
Response time of protection circuit		< 100μs
Maximum output current per channel		500 mA
Leakage Current		Maximum value: 10uA
Hardware response time		100us/100us
Output Impedance		<200mΩ
Output delay		OFF to ON:Max.100us, ON to OFF:Max.150us
Protection function		Over temperature shutdown: typical value 135°C Overcurrent protection: 1.1A. Typical value 0.5A Support short circuit protection
Load Type		Inductive (7.2W/point, 24W/module), Resistive (0.5A/point, 4A/module), Light (5W/point, 18W/module)
Output action display		When the output is in driving state, the indicator light is on.
Input derating		When working at 55°C, the rating is reduced by 50% (the output current of ON at the same time does not exceed 2A), or the rating is reduced by 10°C when all output points are ON
IO Mapping		Support bit-by-bit or word-by-word mapping
Fault shutdown output status mode		Clear, keep current value or output according to preset value
In stop mode		In the fault shutdown mode, no more refresh
Power parameters		
System bus input power rated voltage		5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current		145mA
Input ChannelsTerminal power supply (common terminal) input voltage	NPN signal type	24V
	PNP signal type	0V
Wiring parameters		

Connection technology: Input	PUSH-IN Terminal Blocks
Wire crimping area	0.2～1.5mm2/26～16AWG
Stripping length	8～10mm²
Installation	DIN-35 rail
Material parameters	
color	black
Housing Material	PC plastic, PA66
Conformance mark	CE
Environmental requirements	
Allowable ambient temperature (operating)	-25～60℃
Permissible ambient temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree	2. Comply with IEC 61131-2 standard
Operating altitude	Temperature without derating: 0～2000m
Relative humidity (non-condensing)	5～95%RH
Vibration resistance	1g, in accordance with IEC 60068-2-6
Shock resistance	15g, compliant with IEC 60068-2-27
EMC anti-interference level	Compliant with IEC 61000-4
Corrosion resistance	Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

22.2 Hardware Interface
22.2.1 Terminal Block Definition

Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	illustrate
A1	DI 0	B1	DI 10	C1	DO 20	D1	DO 30	DI signal input:
A2	DI 1	B2	DI 11	C2	DO 21	D2	DO 31	A1~B9

16-channel digital input & 16-channel digital output/24VDC/PNP

A3	DI 2	B3	DI 12	C3	DO 22	D3	DO 32	DO signal output: C1~D9
A4	DI 3	B4	DI 13	C4	DO 23	D4	DO 33	
A5	DI 4	B5	DI 14	C5	DO 24	D5	DO 34	
A6	DI 5	B6	DI 15	C6	DO 25	D6	DO 35	
A7	DI 6	B7	DI 16	C7	DO 26	D7	DO 36	
A8	DI 7	B8	DI 17	C8	DO 27	D8	DO 37	
A9	COM	B9	COM	C9	24V	D9	0V	Public

22.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus power inputnormal	
	Green Kill:System bus power inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off: The internal bus of the module is working abnormally
00～07,10～17	Green: Input signal is valid	
	Green off: Input signal is invalid	
20～27,30～37	Green: Output signal is valid	
	Green off: Output signal is invalid	

16-channel digital input & 16-channel digital output/24VDC/PNP

22.2.3 Wiring Diagram

Note: COM is the common terminal, external 24V is used to realize NPN, external 0V is used to realize PNP.

22.4 Process Data Definition

DF50-M-16DI-16DO-P moduleProcess data definition

Input Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
Byte 1	DI17	DI16	DI15	DI14	DI13	DI12	DI11	DI10

Output Data								
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 2	DO 27	DO 26	DO 25	DO 24	DO 23	DO 22	DO 21	DO 20
Byte 3	DO 37	DO 36	DO 35	DO 34	DO 33	DO 32	DO 31	DO 30

16-channel digital input & 16-channel digital output/24VDC/PNP

22.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:

16-channel digital input & 16-channel digital output/24VDC/PNP

23 32-channel digital input/24VDC/PNP&NPN(DF50-M-32DI-P/N)

➢ The digital input module can receive control signals from field devices (such as sensors, etc.).

➢ 32-channel digital input, PNP&NPN valid, common terminal conversion.

➢ Each input module is equipped with an anti-interference filter.

➢ Each input module has an LED indicator.

➢ The field level and the system level are isolated by optocouplers.

➢ Protection grade IP20.

23.1 Specifications

Technical Information		
Product Description		Digital input modules,32Input, NPN & PNP, 24VDC
Number of channels		32
Signal Type		NPN & PNP
Signal range	"ON" signal voltage	Voltage difference > 11VDC (voltage difference with common input)
	"OFF" signal voltage	Voltage difference <5VDC (voltage difference with common input)
Hardware response time		200us/200us
Data size		4Byte
Connection Type		1-wire, Type 1/Type 3, according to IEC 61131-2
Reverse circuit protection		Yes
Isolation method		Photoelectric isolation from the field layer
Error diagnosis		Yes
Filter time		0-40ms configurable
Input Impedance		>7.5kΩ
Input Action Display		When the input is in driving state, the input indicator light is on.
IO Mapping		Support bit-by-bit or word-by-word mapping
Power parameters		
System bus input power rated voltage		5V DC (4.75V DC~ 5.25V DC)
System bus input power rated current		90mA
Terminal power supply (common terminal) input rated voltage	NPN signal type	24V
	PNP signal type	0V
Wiring parameters		
Connection technology: Input		PUSH-IN Terminal Blocks
Wire crimping area		0.2～1.5mm2/26～16AWG
Stripping length		8～10mm²
Installation		DIN-35 rail
Material parameters		
color		black
Housing Material		PC plastic, PA66
Conformance mark		CE
Environmental requirements		
Allowable ambient temperature (operating)		-25～60℃
Permissible ambient temperature (storage)		-40～85℃
Protection type		IP20
Pollution degree		2. Comply with IEC 61131-2 standard
Operating altitude		Temperature without derating: 0～2000m
Relative humidity (non-condensing)		5～95%RH
Vibration resistance		1g, in accordance with IEC 60068-2-6
Shock resistance		15g, compliant with IEC 60068-2-27
EMC anti-interference level		Compliant with IEC 61000-4
Corrosion resistance		Compliant with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S contaminant concentration at 75% relative humidity		10ppm
Permissible SO2 pollutant concentration at 75% relative humidity		25ppm

23.2 Hardware Interface
23.2.1 Terminal Block Definition
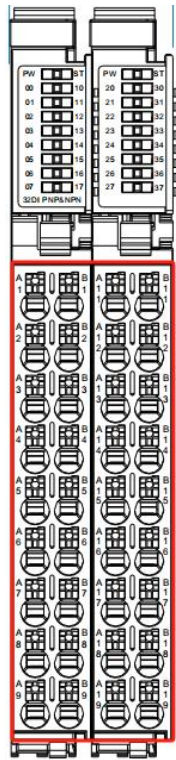
Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	Terminal number	Signal	illustrate
A1	DI 0	B1	DI 10	C1	DI20	D1	DI30	DI signal input
A2	DI 1	B2	DI 11	C2	DI21	D2	DI31	
A3	DI 2	B3	DI 12	C3	DI22	D3	DI32	
A4	DI 3	B4	DI 13	C4	DI23	D4	DI33	
A5	DI 4	B5	DI 14	C5	DI24	D5	DI34	
A6	DI 5	B6	DI 15	C6	DI25	D6	DI35	
A7	DI 6	B7	DI 16	C7	DI26	D7	DI36	
A8	DI 7	B8	DI 17	C8	DI27	D8	DI37	
A9	COM	B9	COM	C9	COM	D9	COM	Public

23.2.2 LED indicator definition

Indicator Lights	meaning	
PW	Green:System bus powerSource Inputnormal	
	Green Kill:System bus powerSource Inputabnormal	
ST	Power-on stage	Green: Module initialization error
		Green off: Module initialization is normal
	Operational stage	Green flash: The internal bus of the module is working normally
		Green off: The internal bus of the module is working abnormally
00～07,10～17 20～27,30～37	Green: Input signal is valid	
	Green off: Input signal is invalid	

32-channel digital input/24VDC/PNP&NPN

23.2.3 Wiring Diagram

Note: COM is the common terminal, external 24V realizes NPN; external 0V realizes PNP.

23.4 Process Data Definition

Bit No	Input Data							
Bit No	Bit7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
Byte 1	DI17	DI16	DI15	DI14	DI13	DI12	DI11	DI10
Byte 2	DI 27	DI 26	DI 25	DI 24	DI 23	DI 22	DI 21	DI 20
Byte 3	DI 37	DI 36	DI 35	DI 34	DI 33	DI 32	DI 31	DI 30

32-channel digital input/24VDC/PNP&NPN

23.5 Mechanical Installation

The installation dimensions are shown in the figure below, in mm:
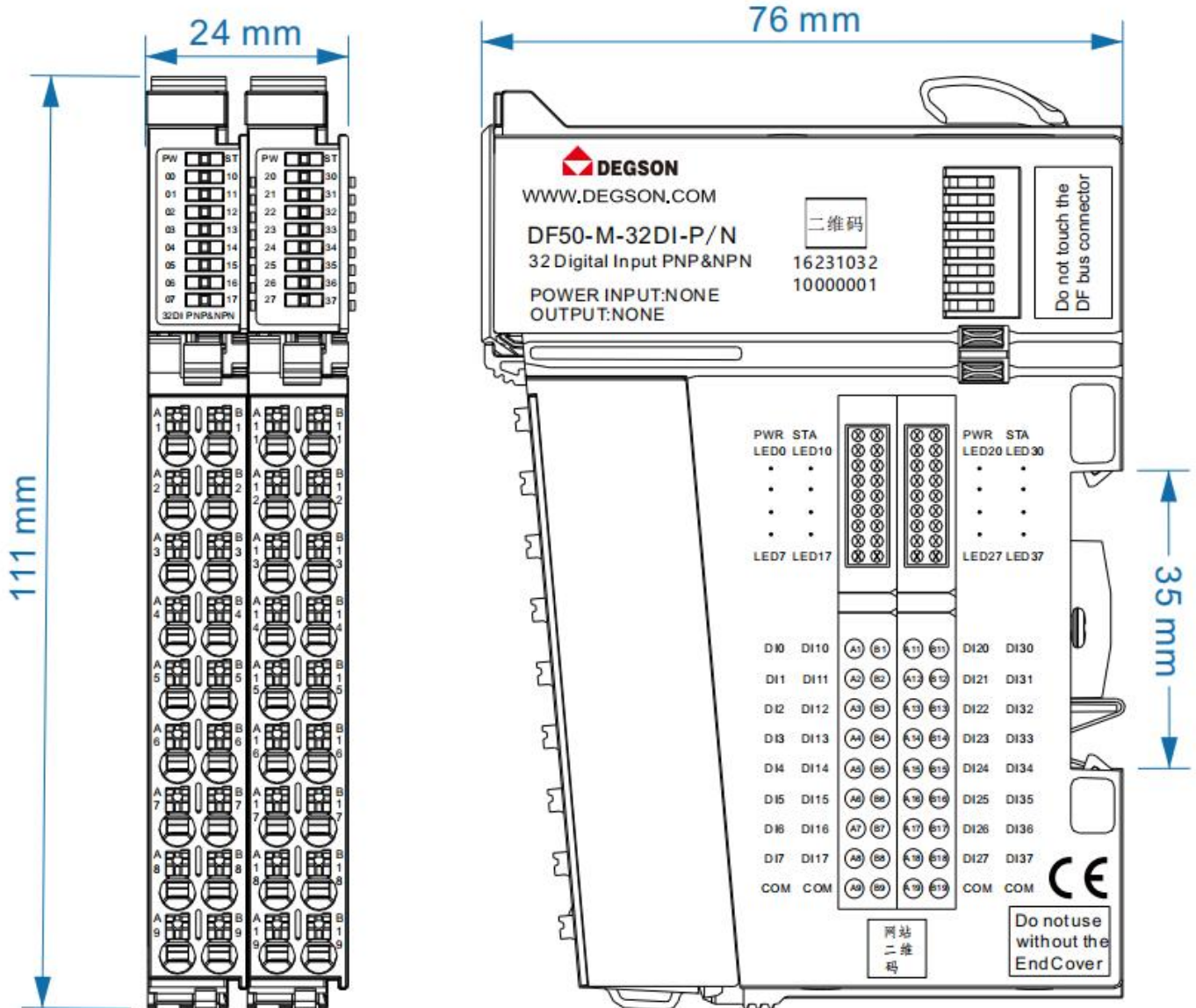
4.Software Configuration Instructions

1 Coupler and IO module data description

1.1Coupler Software Description

➢ The coupler soft element allocation is as follows:

Station Type	Number of	Component name	illustrate
Slave	[1,4]	RX	X × 64 bits For digital input
		RY	X × 64 bits For digital output of
		R	X × 32 words For analog input
		R	X × 32 words For analog output of

Note: X is the number of occupied stations.

1.2IO data soft elements and channel description

➢ IO data allocation instructions

model	Uplink process data	Downlink process data
DF50-C-CC-FB	1 Word (RWr): Diagnostic input status word 8 bits (RX):8-channel input data	1 Word (RWw): Diagnostic output control word
DF50-M-16DI-P/N	16 bits(RX):16 channel input data	-
DF50-M-32DI-P/N	32 bits(RX):32 channel input data	
DF50-M-16DO-N	-	16 bits（RY）:16 channel output data
DF50-M-16DO-P	-	16 bits:（RY）:16 channel output data
DF50-M-4DO-R		4 bits（RY）:4 channel input data
DF50-M-4DO-P-2A	4 bits(RX):4 channel input data	4 bits（RY）:4 channel input data
DF50-M-32DO-P		32 bits（RY）:32 channel output data
DF50-M-32DO-N		32 bits（RY）:32 channel output data
DF50-M-16DI-16DO-P	16 bits(RX):16 channel input data	16 bits（RY）:16 channel output data
DF50-M-16DI-16DO-N	16 bits(RX):16 channel input data	16 bits（RY）:16 channel output data
DF50-M-4AI-UI-6	4 words(RWr):4 channel input data	-
DF50-M-8AI-U-4	8 words(RWr):8 channel input data	-
DF50-M-8AI-I-5	8 words:(RWr):8 channel input data	-
DF50-M-4AO-UI-6	-	4 words（RWw）:4 channel output data
DF50-M-8AO-U-4	-	8 words（RWw）:8 channel output data
DF50-M-8AO-I-5	-	8 words（RWw）:8 channel output data
DF50-M-4RTD-PT	4 words(RWr):4 channel input data	-

DF50-M-1COM-232/485/422	23 words(RWr):Serial port input data	23 words（RWw）:Serial port output data
DF50-M-8TC	8 words(RWr):8 channel input data	8 words（RWw）:8-channel temperature compensation output data
DF50-M-2CNT-PIL-24	1 words(RWr): First channel status word 2 words(RWr): The first channel pulse input value 2 words(RWr): The first channel pulse input latch value 1 words(RWr): Second channel status word 2 words(RWr): Second channel pulse input value 2 words(RWr): Second channel pulse input latch value	1 words（RWw): first channel control word 2 words（RWw）: The first channel pulse comparison value output 1 words（RWw): Second channel control word 2 words（RWw）: Second channel pulse comparison value output
DF50-M-2CNT-PIL-5	1 words(RWr): First channel status word 2 words(RWr): The first channel pulse input value 2 words(RWr): The first channel pulse input latch value 1 words(RWr): Second channel status word 2 words(RWr): Second channel pulse input value 2 words(RWr): Second channel pulse input latch value	1 words（RWw): first channel control word 2 words（RWw）: The first channel pulse comparison value output 1 words（RWw): Second channel control word 2 words（RWw）: Second channel pulse comparison value output

➢ Module channel and soft element correspondence table

DF50-C-CC-FB		
Signal transmission direction: input->master		
RX 0~RX 7	Channel 0~Channel 7	Input signal DI0~DI7
RWr 0	Adapter diagnostic information input	
R	Adapter diagnostic information output	
DF50-M-16DI-P/N		
Signal transmission direction: input->master		
RX 0~RX 7, RX 10~RX 17	Channel 0~Channel 7, Channel 10~Channel 17	Input signal DI0~DI7, DI10~DI17
DF50-M-32DI-P/N		
Signal transmission direction: input->master		
RX 0~RX 7, RX 10~RX 17	Channel 0~Channel 7, Channel 10~Channel 17	Input signal DI0~DI7, DI10~DI17
RX 20~RX 27, RX 38~RX 37	Channel 20~Channel 27, Channel 30~Channel 37	Input signal DI20~DI27, DI30~DI37
DF50-M-16DO-N/DF50-M-16DO-P		
Signal transmission direction: master station -> output module		
RY 0~RY 7, RY 10~RY 17	Channel 0~Channel 7, Channel 10~Channel 17	DO0~DO7,DO10~DO17
DF50-M-4DO-R		

Signal transmission direction: master station -> output module		
RY 0~RY 3	Channel 0~Channel 3	DO0~DO3

DF50-M-4DO-P-2A

Signal transmission direction: input->master		
RX 0~RX 3	Channel 0~Channel 3	Input signal DI0~DI3
Signal transmission direction: master station -> output module		
RY 0~RY 3	Channel 0~Channel 3	DO0~DO3

DF50-M-32DO-P

Signal transmission direction: master station -> output module		
RY 0~RY 7, RY 10~RY 17	Channel 0~Channel 7, Channel 10~Channel 17	DO0~DO7,DO10~DO17
RY 20~RY 27, RY 30~RY 37	Channel 20~Channel 27, Channel 30~Channel 37	DO20~DO27,DO30~DO37

DF50-M-32DO-N

Signal transmission direction: master station -> output module		
RY 0~RY 7, RY 10~RY 17	Channel 0~Channel 7, Channel 10~Channel 17	DO0~DO7,DO10~DO17
RY 20~RY 27, RY 30~RY 37	Channel 20~Channel 27, Channel 30~Channel 37	DO20~DO27,DO30~DO37

DF50-M-16DI-16DO-P

Signal transmission direction: input->master		
RX 0~RX 7, RX 10~RX 17	Channel 0~Channel 7, Channel 10~Channel 17	Input signal DI0~DI7, DI10~DI17
Signal transmission direction: master station -> output module		
RY 0~RY 7, RY 10~RY 17	Channel 0~Channel 7, Channel 10~Channel 17	DO0~DO7,DO10~DO17

DF50-M-16DI-16DO-N

Signal transmission direction: input->master		
RX 0~RX 7, RX 10~RX 17	Channel 0~Channel 7, Channel 10~Channel 17	Input signal DI0~DI7, DI10~DI17
Signal transmission direction: master station -> output module		
RY 0~RY 7, RY 10~RY 17	Channel 0~Channel 7, Channel 10~Channel 17	DO0~DO7,DO10~DO17

DF50-M-4AI-UI-6

Signal transmission direction: input module -> master station		
RWr 0~RWr 3	Channel 0~Channel 3	Input signal AI0~AI3

DF50-M-8AI-U-4/DF50-M-8AI-I-5

Signal transmission direction: input module -> master station		
RWr 0~RWr 7	Channel 0~Channel 7	Input signal AI0~AI7

DF50-M-4AO-UI-6

Software Configuration Instructions

Signal transmission direction: master station -> output module		
RWw 0~RWw 3	Channel 0~Channel 3	Output signal AO0~AO3
DF50-M-8AO-U-4/DF50-M-8AO-I-5		
Signal transmission direction: master station -> output module		
RWw 0~RWw 7	Channel 0~Channel 7	Output signal AO0~AO7
DF50-M-4RTD-PT		
Signal transmission direction: input module -> master station		
RWr 0~RWr 3	Channel 0~Channel 3	Input signal AI0~AI3
DF50-M-8TC		
Signal transmission direction: input module <-> master station		
RWr 0~RWr 7	Channel 0~Channel 7	Input signal AI0~AI7
Channel compensation data		
RWw 0~RWw 7	Channel 0~Channel 7	Compensation data of channel 0 to channel 7
DF50-M-2CNT-PIL-24/DF50-M-2CNT-PIL-5		
Signal transmission direction: input module <-> master station		
Input Data		
Rw0	Channel 1 control word	
Rw1~2	Channel 1Pulse comparison value output	
Rw3	Channel 2 control word	
Rw4~5	Channel 2 pulse comparison value output	
Output Data		
R0	Channel 1 status word	
R1~2	Channel 1Pulse input value	
R3~4	Channel 1Pulse input latch value	
R5	Channel 2 status word	
R6~7	Channel 2Pulse input value	
R8~9	Channel 2Pulse input latch value	
DF50-M-1COM-232/485/422		
Signal transmission direction: input module <-> master station		
RWr0~RWr22	Serial port input data	
RWw0~RWw22	Serial port output data	

2 Bus module configuration instructions

2.1 Use in GX Works3 software environmentFX5U-32MT/ES PLCapplication

2.1.1 Preparation

➢ Hardware Environment

● Module Preparation

This description uses DF50-C-CC-FB coupler,DF50-M-16DI-P/N,DF50-M-16DO-N, DF50-M-16DO-P,

DF50-M-4AI-UI-6,DF50-M-8AI-U-4,DF50-M-8AI-I-4,DF50-M-4AO-UI-6,DF50-M-8AO-U-4,

DF50-M-8AO-I-4,Take DF50-M-4RTD-PT, DF50-M-8TC 11 modules as an example.

● A computer with GX Works3 software pre-installed.

● Shielded cable for CC-Link IE Field Basic.

● Mitsubishi PLC 1 setThis description takes FX5U-32MT/ES as an example.

● Switching power supply.

● Module mounting rails and rail fixings.

● Device Profile"0x0352_DF50-C-CC-FB_1.0.0_en".

2.1.2 Install CSP File

a. Open GX Work3 software and click "Tool, clickProfile Management->Register", as shown in the figure below.
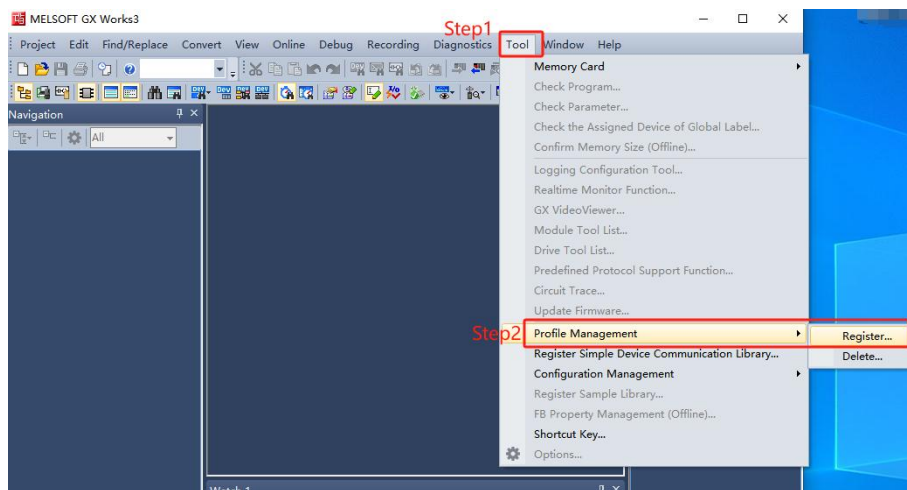
b. In the pop-up box, select the CSP file to be added and click "Login" to complete the installation, as shown in the figure below.
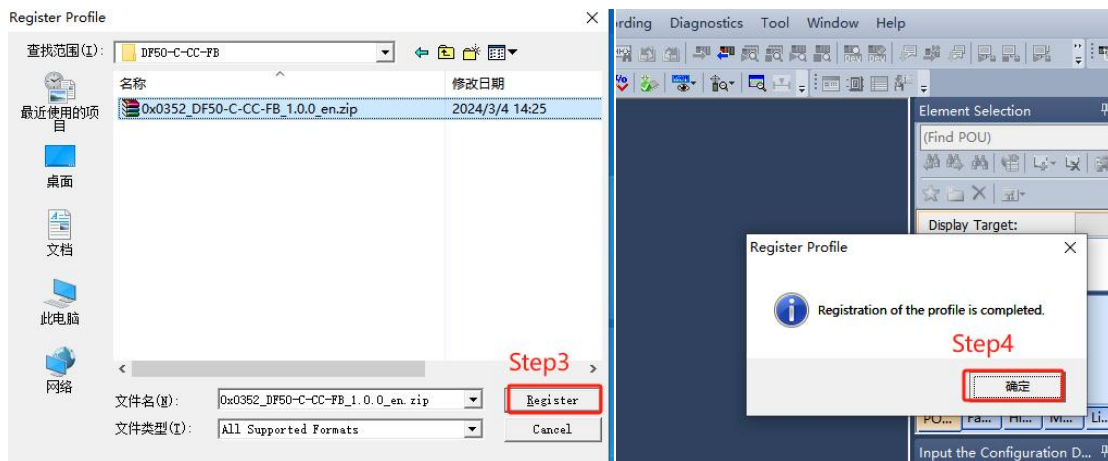
c. **The configuration file does not need to be decompressed, and the project needs to be closed during installation; if the configuration file needs to be replaced, be sure to uninstall it before adding it**.

2.1.3 Create a project

a. Click "New Project" in the menu bar.

b. The New Project dialog box pops up. Select "FX5CPU", select "PLC type"FX5U", the program language defaultLadder.

c.Click OK, as shown in the following figure.
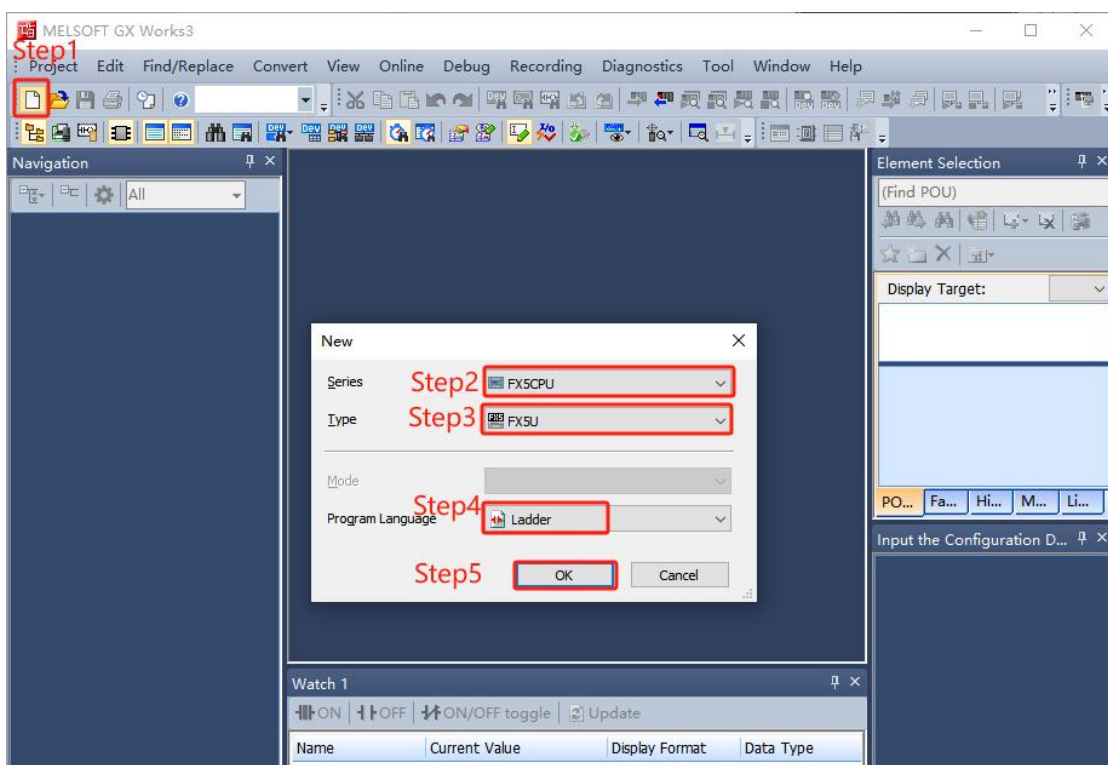
d.As shown in the figure belowProject creation completed.
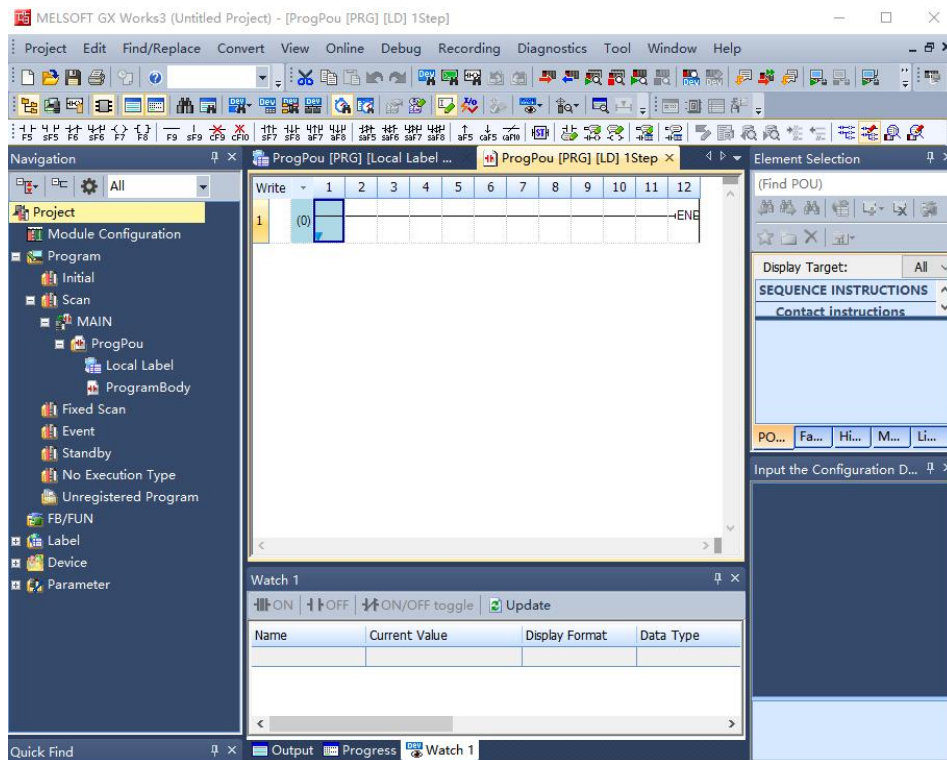
2.1.4 Create Configuration

➢ Enable PLC remote reset function:

a. As shown in Step 1 below, in the left navigation interface, select "Parameter -> FX5UCPU->CPU Parameter" and double-click "CPU Parameter";

b. As shown in Step 2 below, double-click "Remote Reset Setting";

c. As shown in Step 3 below, select Enable in Remote Reset to enable the remote reset function;

d. As shown in Step 4 below, click "Apply" to apply the page option.
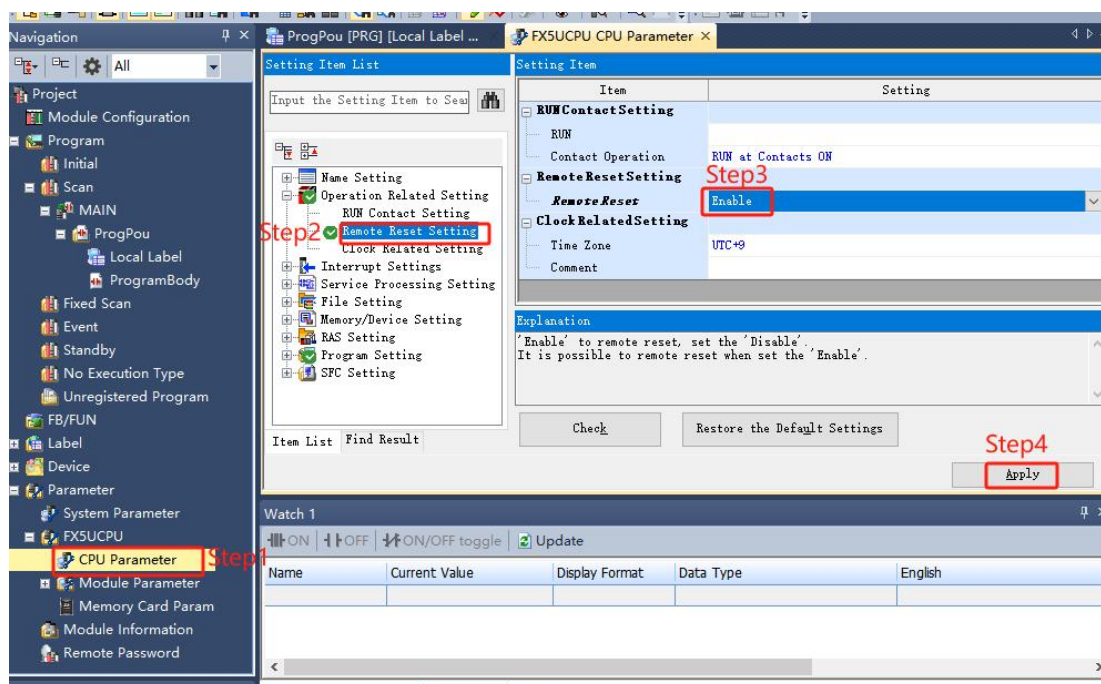
➢ Network Configuration:

a. As shown in Step 1 below, double-click "Ethernet Port";

b. As shown in Step 2 below, set the "IP Address" and "Subnet Mask" under "Own Node Settings".

c. As shown in Step 3 below, set "Use" in the "CC-Link IEF Basic Settings"->" To Use or Not to Use CC-Link IEF Basic Setting" option.

d. As shown in Step 4 below, in the "CC-Link IEF Basic Settings"->"Network Configuration Settings" option, double-click <Detailed Setting> to enter Step 5.
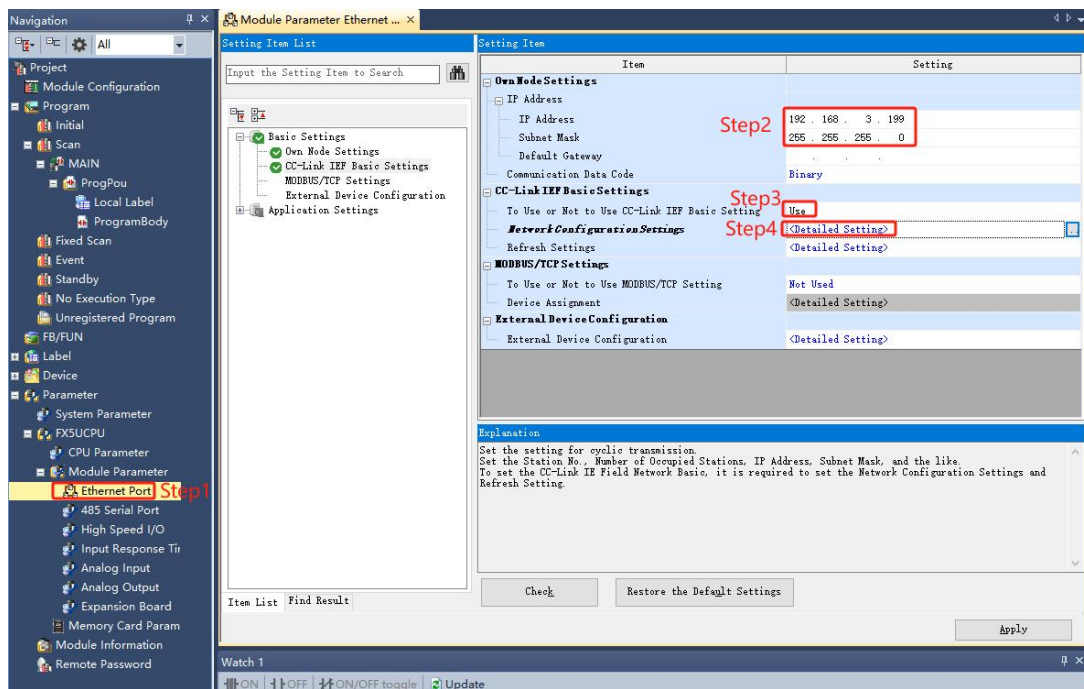
e. As shown in Step 5, Step 6, and Step 7, scan the slave devices.
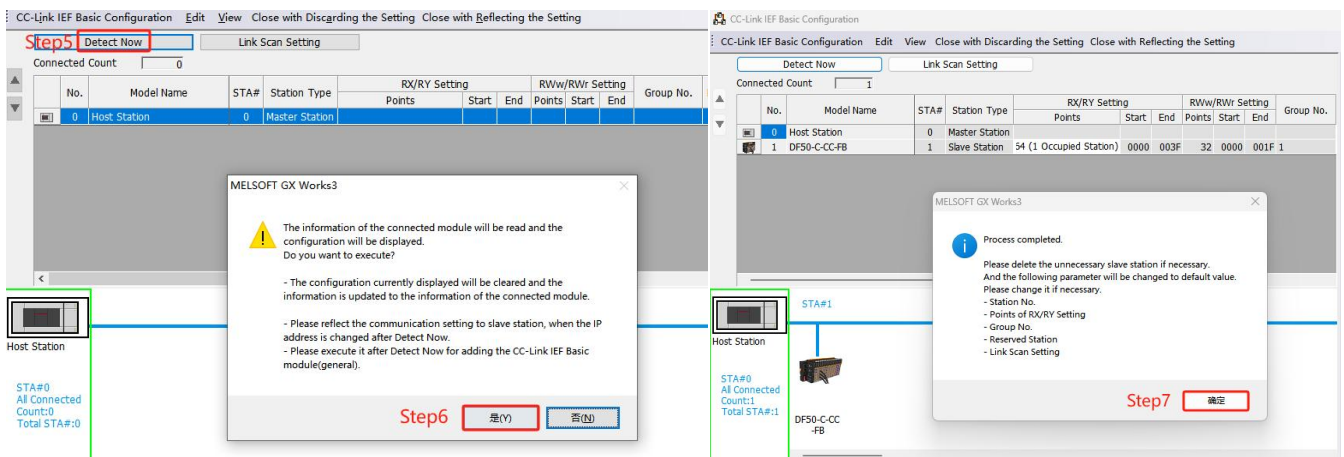
f. As shown in Step 8, click "Parameter Process of Slave Station" to set the slave station parameters.
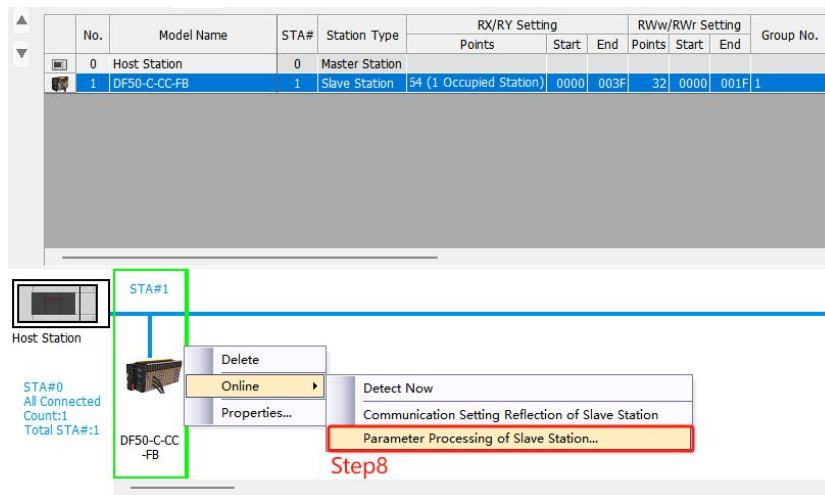
g. The slave parameter reading or writing interface is shown in the figure below.
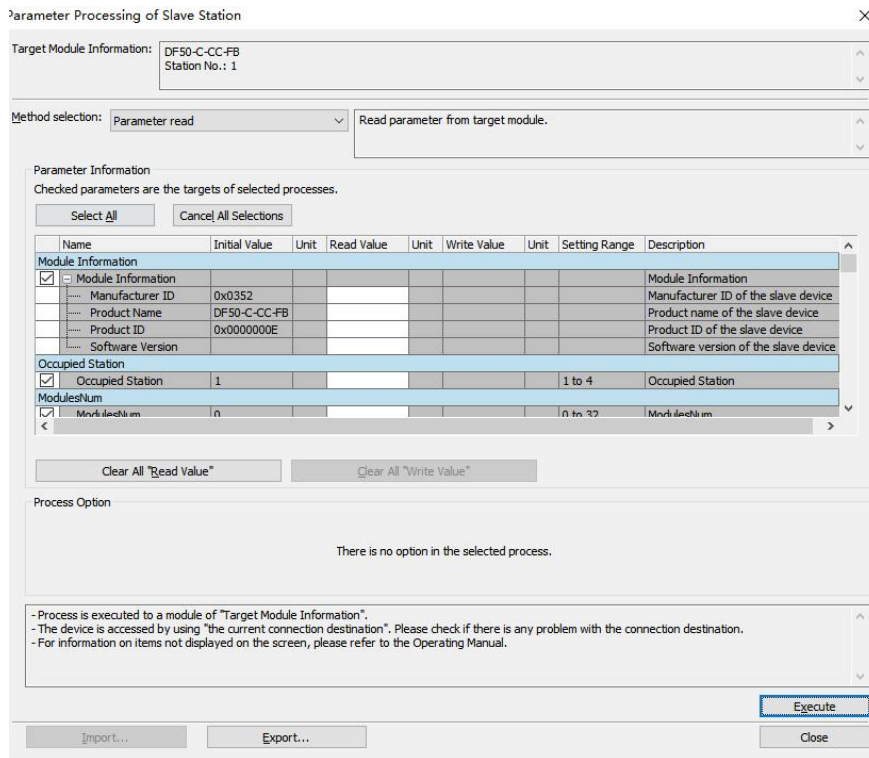
h. As shown in Step 9 to Step 12, read the slave parameters.
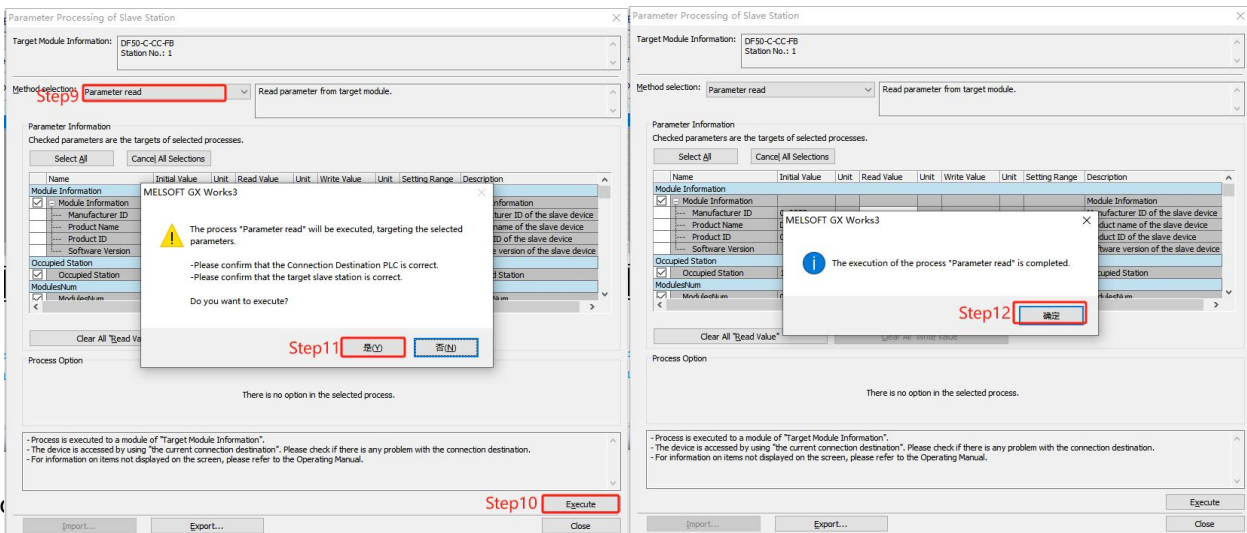
i. As shown in Step 13 below, record the number of stations occupied by the slave stations, which will be used in the next step of settings.
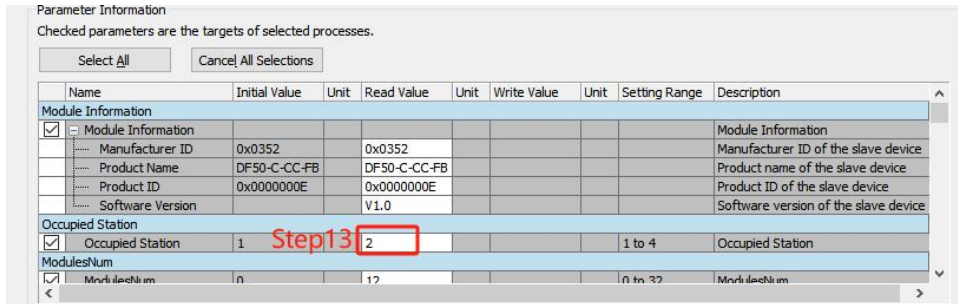
j. As shown in Step 14 below, select the number of stations according to the number of stations "2" of "Occupied Station" in Step 13, and click "Close with Reflecting Setting" as shown in Step 15 to reflect the setting and close.
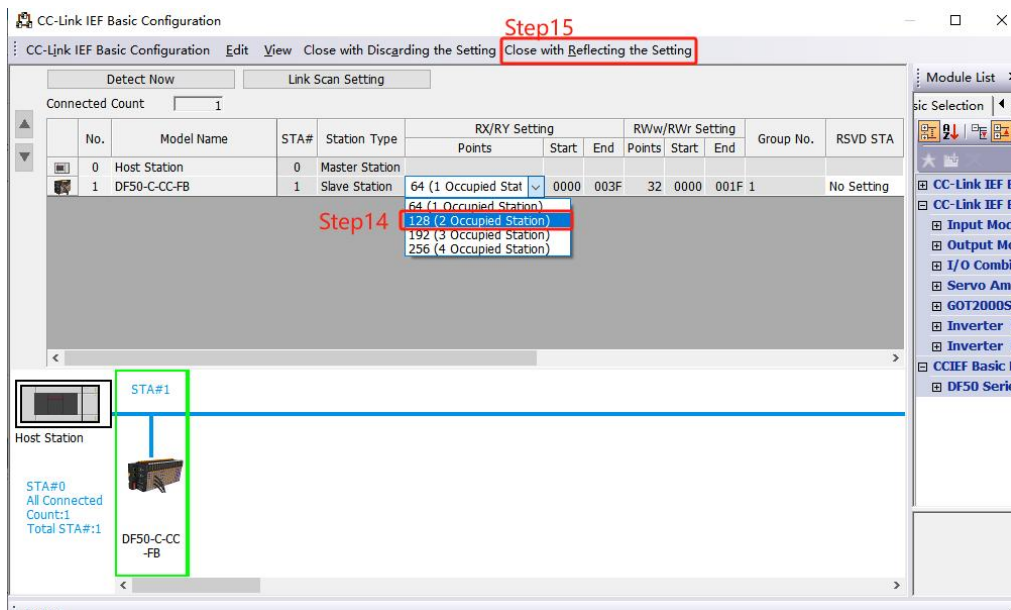
k. As shown in Step 16 below, double-click CC-Link IEF Settings->Refresh Settings->Detailed Setting to enter the refresh settings interface.
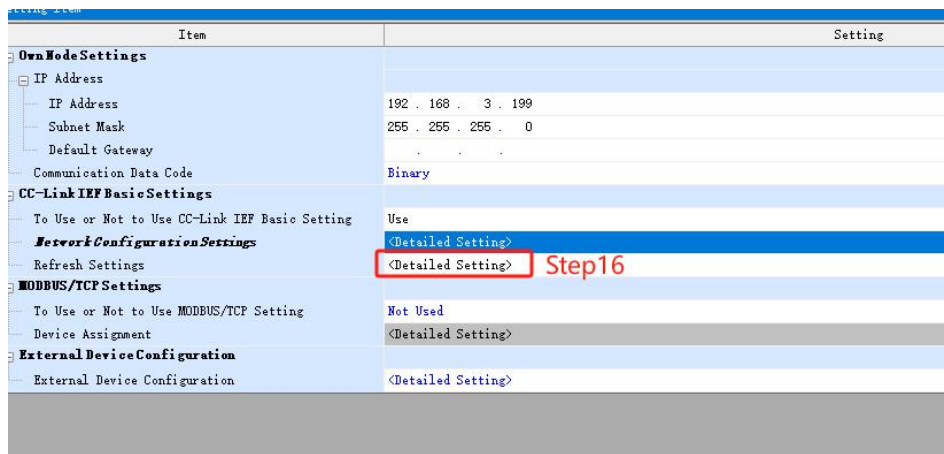
l. As shown in Step 17~Step 18 below, refresh settings and apply them.
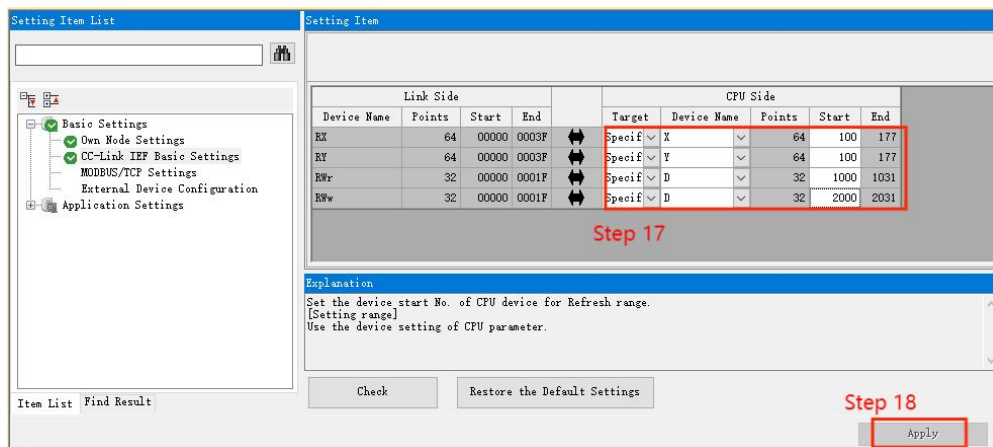
m. As shown in Step 19, compile the project. As shown in Step 20, no error is reported.
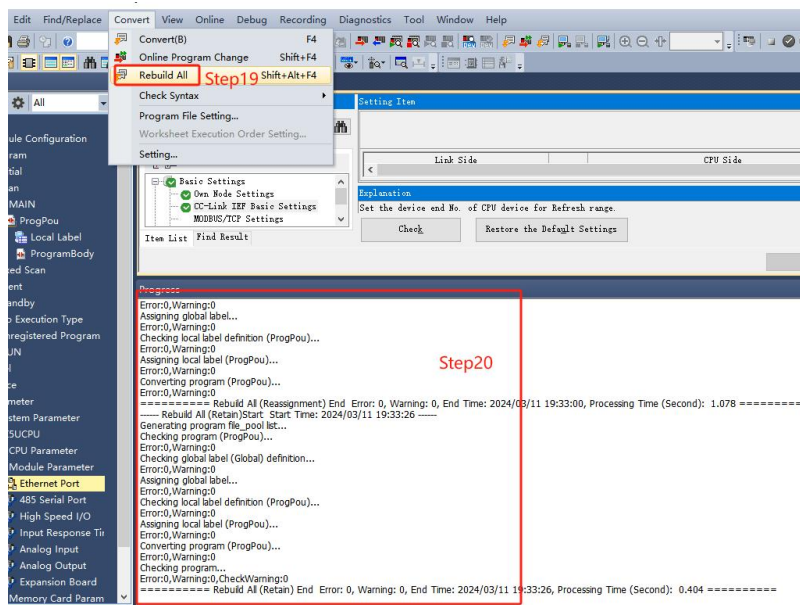
n. Download the project as shown in Step 21 to Step 29.

o. As shown in Step 30 to Step 39, reset the PLC and set it to RUN state, so there is no need to power off the PLC again.
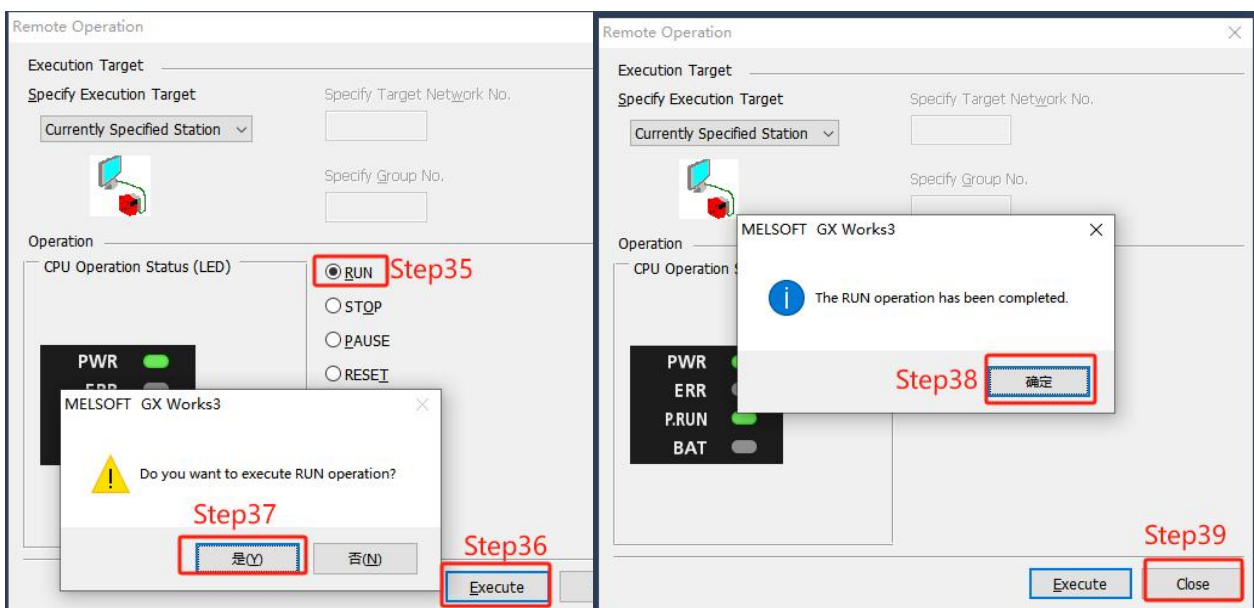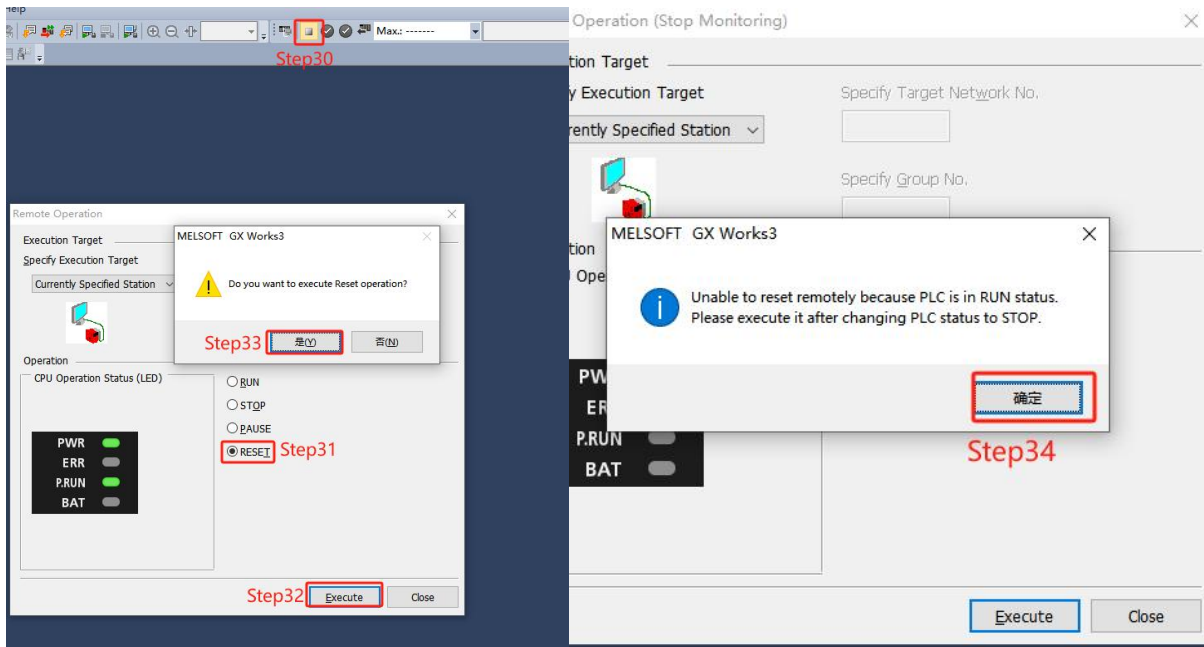
p. For monitoring settings, as shown in Step 40, select "Online" -> "Monitor" -> "Device/Buffer Memory

Batch Monitor".
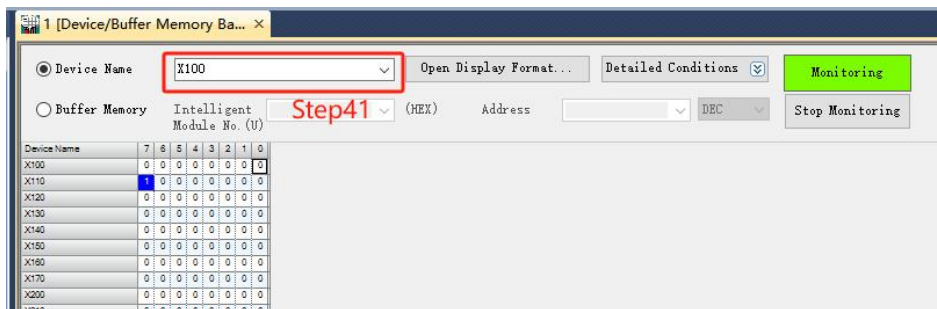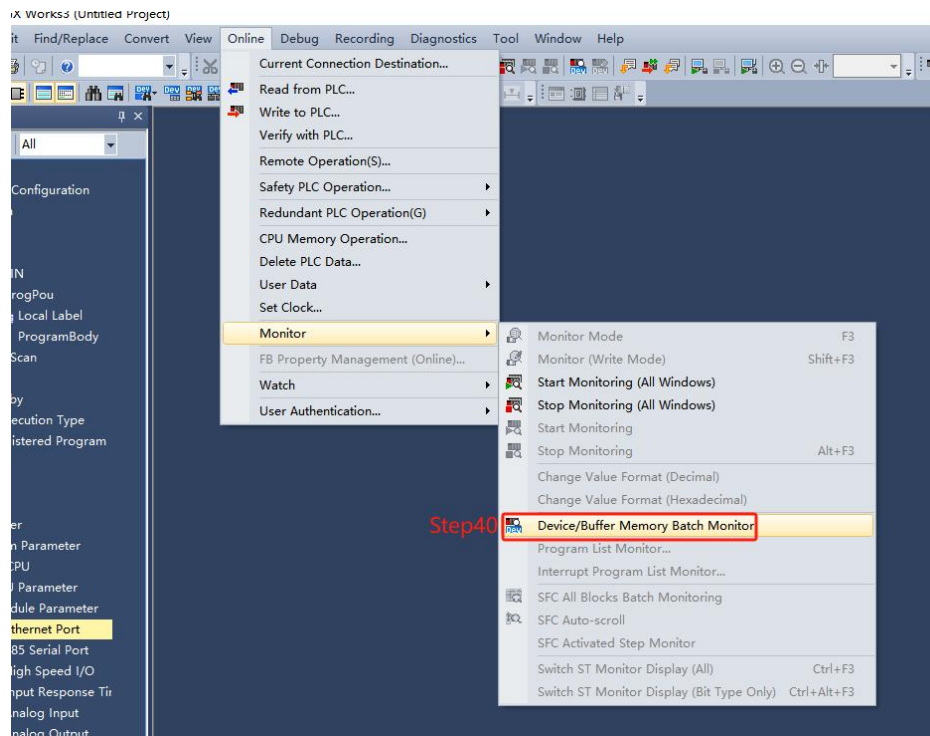
q. Repeat the above operation to establish four monitoring interfaces. Enter the parameters of "Remote Input (RX) Refresh Soft Component", "Remote Output (RY) Refresh Soft Component", "Remote Register (RWr)" and "Remote Register (RWw)" set in the network parameter setting interface in "Device Name" of the four monitoring interfaces, that is, "X100", "Y100", "D1000" and "D2000", and the monitoring setting is completed.

2.1.5 Slave Parameter Setting Instructions

➢ The figure shows the slave parameter interface. First, execute "Parameter read" to read all the current module parameters. Table 1 shows the detailed description of these parameters. If the current parameters meet the user's needs, there is no need to repeatedly set the module configuration parameters.

Table 1

Name	Initial Value	Read Value	illustrate
Moudle Information			
Manufacturer ID	0x0352	0x0352	Manufacturer ID, read only
Product Name	DF50-C-CC-FB	DF50-C-CC-FB	Product name, read only
Product ID	0x0000000E	0x0000000E	Product ID, read only
Software Version	/	V1.0	
Occupied Station			
Occupied Station	1	2	Number of stations occupied by the module, read only
ModulesNum			
ModulesNum	0	11	Number of stations occupied by the module,

			read only
Outputs Hold or Clear			
Outputs Hold or Clear	Clear	Clear	The network disconnection output module maintains or clears the output, which can be read and written
Digital InputFilter Parameter			
Inputs Filter	3ms	3ms	Module input filtering, readable and writable
DF50-M-4AI-UI-6 Parameter			
Ch0 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 0 signal range selection, readable and writable
Ch0 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 0 signal filter selection, readable and writable
	:		
Ch3 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 3 signal range selection, readable and writable
Ch3 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 3 signal filter selection, readable and writable
DF50-M-8AI-U-4 Parameter			
Ch0 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 0 signal range selection, readable and writable
Ch0 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 0 signal filter selection, readable and writable
	:		
Ch7 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 7 signal range selection, readable and writable
Ch7 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 7 signal filter selection, readable and writable

Software Configuration Instructions

DF50-M-8AI-I-5 Parameter			
Ch0 Signal Range Select	4~20mA 0~27648	4~20mA 0~27648	Channel 0 signal range selection, readable and writable
Ch0 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 0 signal filter selection, readable and writable
:			
Ch7 Signal Range Select	4~20mA 0~27648	4~20mA 0~27648	Channel 7 signal range selection, readable and writable
Ch7 Input Filter Select	100HZ_10ms	100HZ_10ms	Channel 7 signal filter selection, readable and writable
DF50-M-4AO-UI-6 Parameter			
Ch0 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 0 signal range selection, readable and writable
Ch1 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 1 signal range selection, readable and writable
Ch2 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 2 signal range selection, readable and writable
Ch3 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 3 signal range selection, readable and writable
DF50-M-8AO-U-4 Parameter			
Ch0 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 0 signal range selection, readable and writable
:			
Ch7 Signal Range Select	-10V~10V -27648~27648	-10V~10V -27648~27648	Channel 7 signal range selection, readable and writable
DF50-M-8AO-I-5 Parameter			

Ch0 Signal Range Select	4~20mA 0~27648	4~20mA 0~27648	Channel 0 signal range selection, readable and writable
:			
Ch7 Signal Range Select	4~20mA 0~27648	4~20mA 0~27648	Channel 7 signal range selection, readable and writable
DF50-M-4RTD-PT Parameter			
RTD Type Select	PT100 -200...850 degrees C	PT100 -200...850 degrees C	Sensor type selection, read and write
Signal Filter Select	5Hz_200ms	5Hz_200ms	Module channel filter selection, readable and writable
DF50-M-8TC Parameter			
TC Type Select	K -270...1370 degrees C	K -270...1370 degrees C	Sensor type selection, read and write
TC Filter Select	450ms	450ms	Module channel filter selection, readable and writable
DF50-M-2CNT-PIL-5 Parameter			
Ch0: Signal Type	Rotary transducer quadurpe	Rotary transducer quadurpe	Channel 0 signal type configuration
Ch0: DI Signal Function	Disable	Disable	Channel 0 DI signal function configuration
Ch0: Filter Time Signal A	100KHz	100KHz	Channel 0 A phase signal filter configuration
Ch0: Filter Time Signal B	100KHz	100KHz	Channel 0 B phase signal filter configuration
Ch0: Directional Logic	Positive logic	Positive logic	Channel 0 direction logic configuration
Ch0: Count Mode	Line Counter	Line Counter	Channel 0 counting mode configuration
Ch0: Comparison Function	Disable	Disable	Channel 0 comparison function configuration
Ch0: Field Bus Error	Continue counting	Continue counting	Channel 0 bus abnormality counting action configuration

Software Configuration Instructions

Ch0: Upper Limit	2147483647	2147483647	Channel 0 cycle mode upper limit
Ch0: Lower Limit	-2147483648	-2147483648	Channel 0 cycle mode lower limit
Ch1: Signal Type	Rotary transducer quadurpe	Rotary transducer quadurpe	Channel 1 signal type configuration
Ch1: DI Signal Function	Disable	Disable	Channel 1 DI signal function configuration
Ch1: Filter Time Signal A	100KHz	100KHz	Channel 1 A phase signal filter configuration
Ch1: Filter Time Signal B	100KHz	100KHz	Channel 1 B phase signal filter configuration
Ch1: Directional Logic	Positive logic	Positive logic	Channel 1 Direction Logic Configuration
Ch1: Count Mode	Line Counter	Line Counter	Channel 1 counting mode configuration
Ch1: Comparison Function	Disable	Disable	Channel 1 comparison function configuration
Ch1: Field Bus Error	Continue counting	Continue counting	Channel 1 bus abnormality counting action configuration
Ch1: Upper Limit	2147483647	2147483647	Channel 1 cycle mode upper limit
Ch1: Lower Limit	-2147483648	-2147483648	Channel 1 cycle mode lower limit
DF50-M-2CNT-PIL-24 Parameter			
Ch0: Signal Type	Rotary transducer quadurpe	Rotary transducer quadurpe	Channel 0 signal type configuration
Ch0: DI Signal Function	Disable	Disable	Channel 0 DI signal function configuration
Ch0: Filter Time Signal A	100KHz	100KHz	Channel 0 A phase signal filter configuration
Ch0: Filter Time Signal B	100KHz	100KHz	Channel 0 B phase signal filter configuration
Ch0: Directional Logic	Positive logic	Positive logic	Channel 0 direction logic configuration
Ch0: Count Mode	Line Counter	Line Counter	Channel 0 counting mode configuration

Ch0: Comparison Function	Disable	Disable	Channel 0 comparison function configuration
Ch0: Field Bus Error	Continue counting	Continue counting	Channel 0 bus abnormality counting action configuration
Ch0: Upper Limit	2147483647	2147483647	Channel 0 cycle mode upper limit
Ch0: Lower Limit	-2147483648	-2147483648	Channel 0 cycle mode lower limit
Ch1: Signal Type	Rotary transducer quadurpe	Rotary transducer quadurpe	Channel 1 signal type configuration
Ch1: DI Signal Function	Disable	Disable	Channel 1 DI signal function configuration
Ch1: Filter Time Signal A	100KHz	100KHz	Channel 1 A phase signal filter configuration
Ch1: Filter Time Signal B	100KHz	100KHz	Channel 1 B phase signal filter configuration
Ch1: Directional Logic	Positive logic	Positive logic	Channel 1 Direction Logic Configuration
Ch1: Count Mode	Line Counter	Line Counter	Channel 1 counting mode configuration
Ch1: Comparison Function	Disable	Disable	Channel 1 comparison function configuration
Ch1: Field Bus Error	Continue counting	Continue counting	Channel 1 bus abnormality counting action configuration
Ch1: Upper Limit	2147483647	2147483647	Channel 1 cycle mode upper limit
Ch1: Lower Limit	-2147483648	-2147483648	Channel 1 cycle mode lower limit
DF50-M-1COM-232/485/422 Parameter			
Port Operation Mode	FreeRUN	FreeRUN	Operation Mode
Port Interface	RS485	RS485	Interface Type
Port Parity	None	None	Check digit
Port Databits	8bit	8bit	Data bits
Port Stopbit	1bit	1bit	Stop bits
Port Baudrate	115200bps	115200bps	Baud rate

FreeRUN:Interval time (ms)	1	1	Frame interval time in free mode and SLAVE mode
Slave:Slave ID	1	1	Slave Mode Slave Mode Address
Slave:Slave Response Delay(ms)	0	0	Slave mode slave response time
Master:Ch0: Slave ID	0	0	Channel 0 slave address configuration
Master:Ch0: Event Trigger	PollMode	PollMode	Channel 0 trigger mode configuration
Master:Ch0: Lost Action	Hold Data	Hold Data	Channel 0 offline action configuration
Master:Ch0: Operation Code	WRITE MULTIPLE HOLDING REGISTERS	WRITE MULTIPLE HOLDING REGISTERS	Channel 0 function code configuration
Master:Ch0: Reg Addr	0	0	Channel 0 register address configuration
Master:Ch0: Reg Num	0	0	Channel 0 register quantity configuration
Master:Ch0: Poll Time	500	500	Channel 0 polling period configuration
Master:Ch0: Poll Delay	0	0	Channel 0 interval time configuration
Master:Ch0: Response Timeout	1000	1000	Channel 0 slave timeout configuration
Master:Ch1: Slave ID	0	0	Channel 1 slave address configuration
:			
Master:Ch1: Response Timeout	1000	0	Channel 1 slave timeout configuration
Master:Ch2: Slave ID	0	0	aisle2Slave address configuration
:			
Master:Ch2: Response Timeout	1000	1000	aisle2Slave Timeout Configuration
Master:Ch3: Slave ID	0	0	aisle3Slave address configuration
:			
Master:Ch3: Response Timeout	1000	1000	aisle3Slave Timeout Configuration

Master:Ch4: Slave ID	0	0	aisle4Slave address configuration
:			
Master:Ch4: Response Timeout	1000	1000	aisle4Slave Timeout Configuration
Master:Ch5: Slave ID	0	0	aisle5Slave address configuration
:			
Master:Ch5: Response Timeout	1000	1000	aisle5Slave Timeout Configuration
Master:Ch6: Slave ID	0	0	aisle6Slave address configuration
:			
Master:Ch6: Response Timeout	1000	1000	aisle6Slave Timeout Configuration
Master:Ch7: Slave ID	0	0	aisle7Slave address configuration
:			
Master:Ch7: Response Timeout	1000	1000	aisle7Slave Timeout Configuration

➢ If the user needs to reset the parameters, in the pop-up window of the slave station, set the execution

process to "Parameter write".

Click "Cancel All Selections" to configure the parameters individually, as shown in the following figure.

a. For example, to modify the clear/hold function parameters, you can check the "Outputs Hold or Clear"

function option.

In the "Write Value" of "Clear", select "Clear" or "Hold" as needed. After the setting is completed, click

"Execute" to save the parameters to

coupler and download the parameters to the controller at the same time to make the parameters effective,

as shown in the figure below.
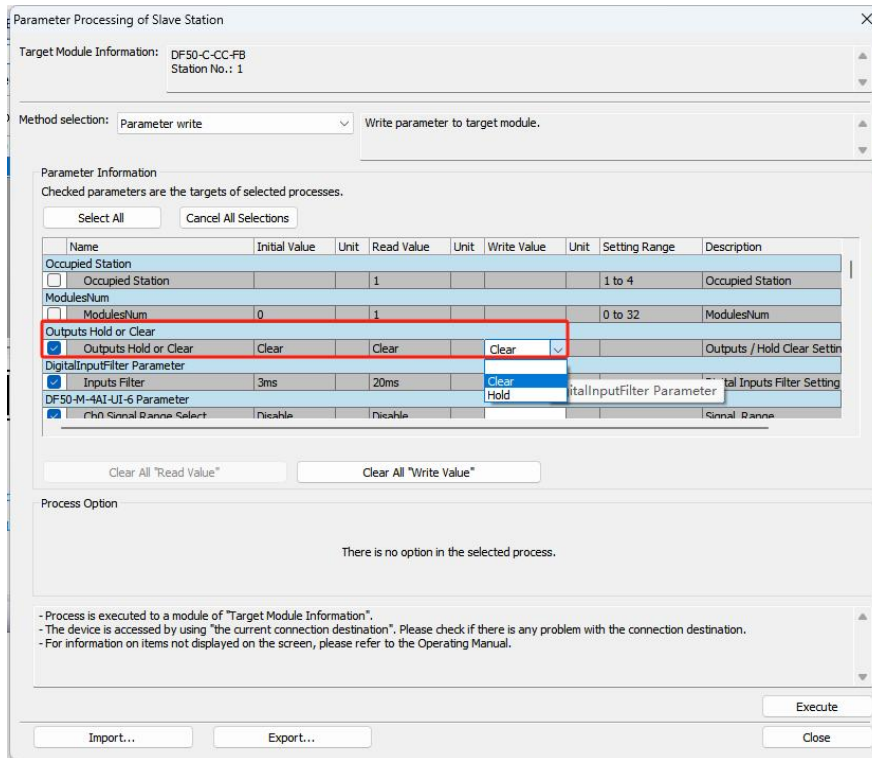
b. To modify the DigitalInputFilter Parameter filter time parameter, you can check the "Input Filter" function option and

Select the filter time as needed in the "Write Value" of the control panel. After the setting is completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below.
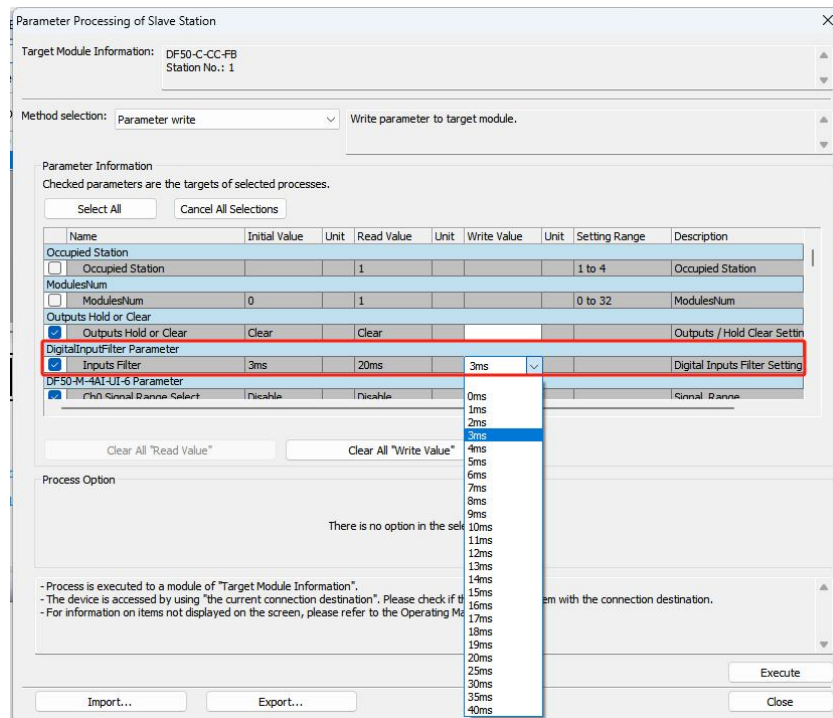
c. Modify the DF50-M-4AI-UI-6 parameters. This module contains 8 parameters, the range and sampling of each channel of CH0~CH3

Frequency, select all 8 parameter options under this module, select corresponding parameters according to user needs, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
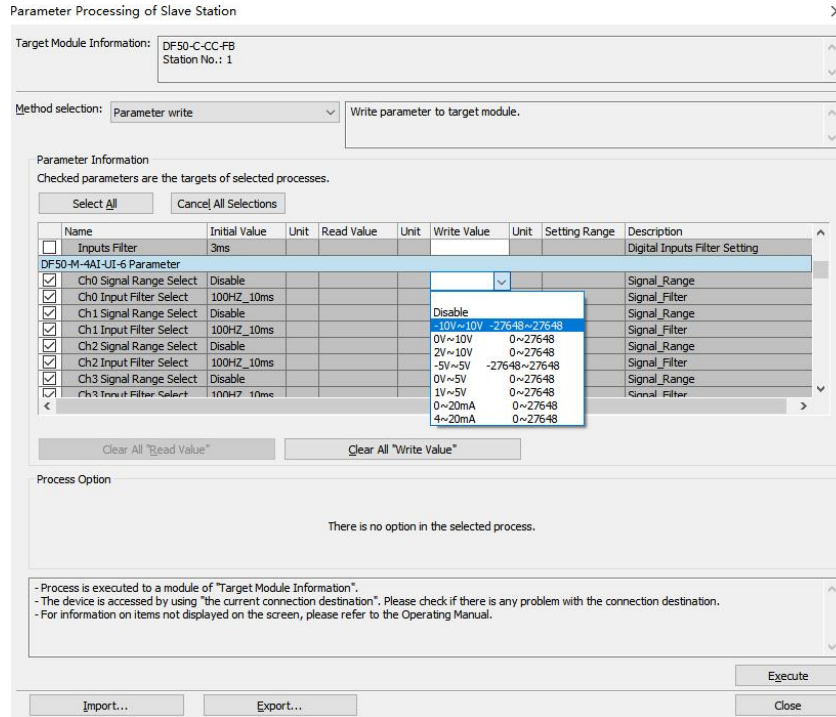
d. Modify the DF50-M-8AI-U-4 parameters. This module contains 16 parameters, the range and sampling of each channel of CH0~CH7

Frequency, select all 16 parameter options under this module, select corresponding parameters according to user needs, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
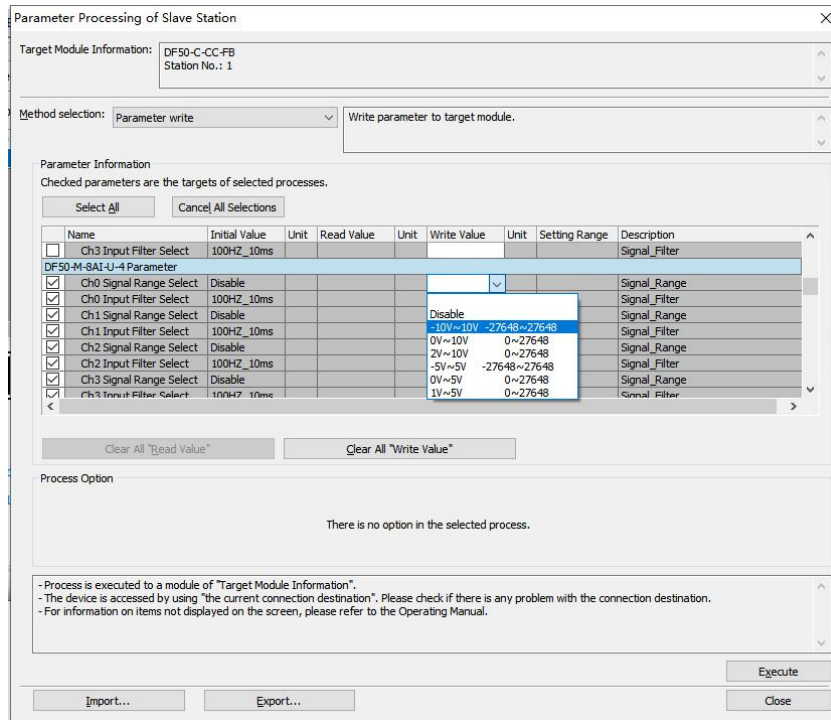
e. Modify the DF50-M-8AI-I-5 parameters. This module contains 16 parameters, the range and sampling of each channel of CH0~CH7

Frequency, select all 16 parameter options under this module, select the corresponding parameters according to user needs, and after the settings are completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below
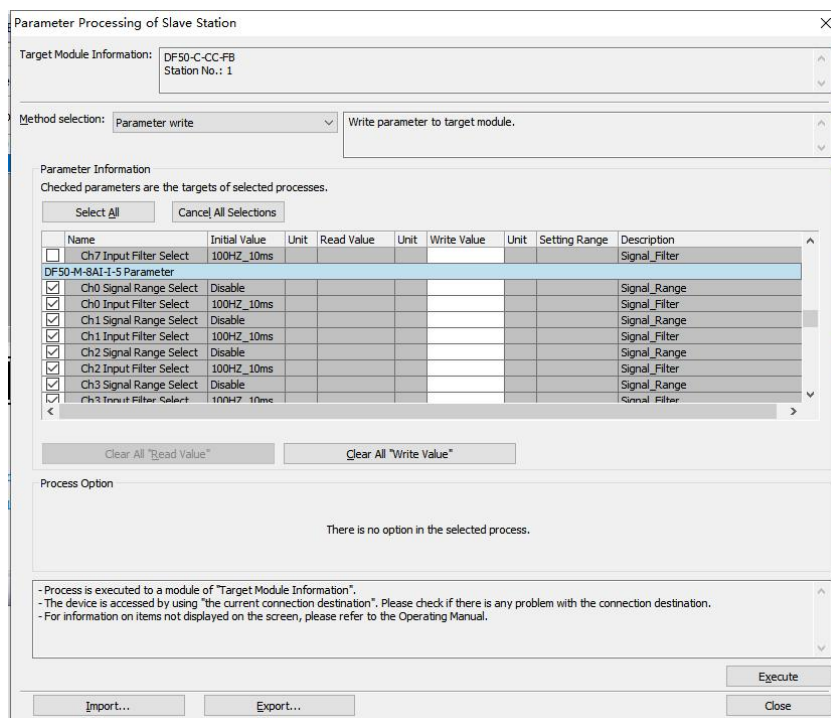
f. Modify the DF50-M-4AO-UI-6 parameters. This module contains 4 parameters, the range of each

channel from CH0 to CH3.

Select all 4 parameter options under the module, select the corresponding parameters according to user needs, and after the settings are completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below
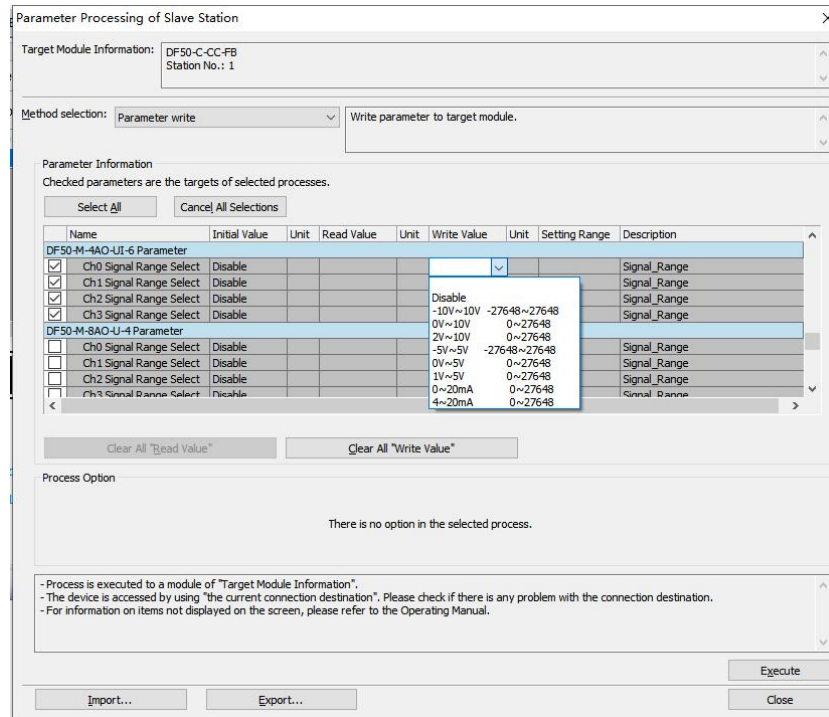
g. Modify the DF50-M-8AO-U-4 parameters. This module contains 8 parameters, the range of each channel from CH0 to CH7.

Select all 8 parameter options under the module, select corresponding parameters according to user needs, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
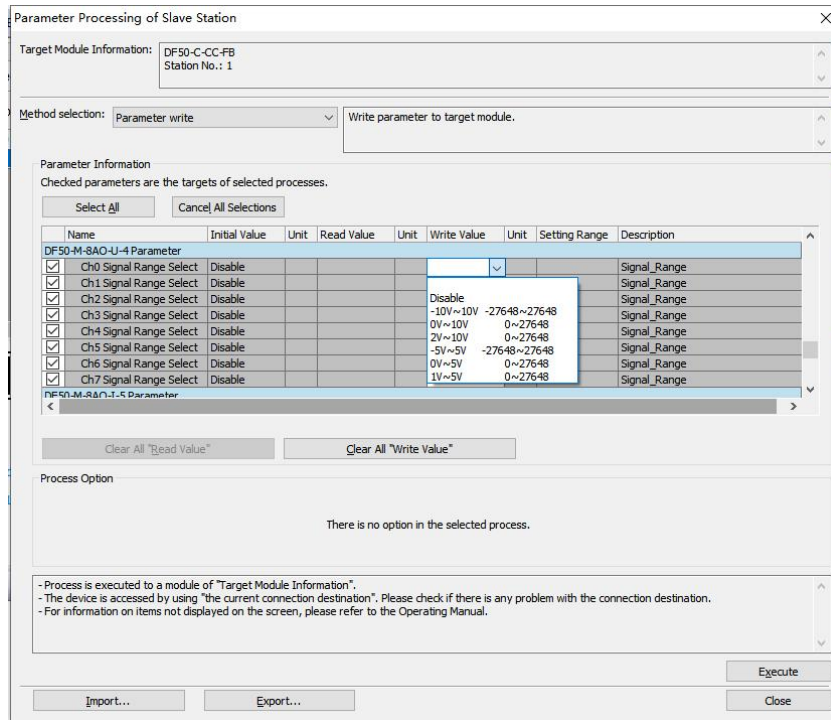
h. Modify the parameters of DF50-M-8AO-I-5. This module contains 8 parameters, the range of each channel from CH0 to CH7.

Select all 8 parameter options under the module, select corresponding parameters according to user needs, and after setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
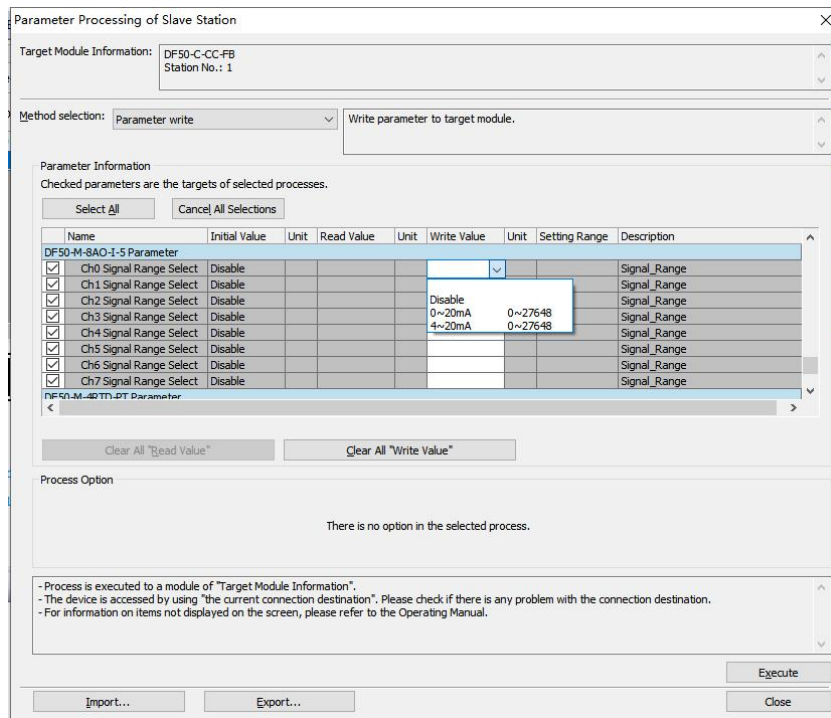
i. Modify the DF50-M-4RTD-PT parameters. This module contains two parameters: the sensor type and sampling frequency connected to the module.

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Select all the two parameter options under this module, select the corresponding parameters according to user needs, and after the settings are completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below.

j. Modify the DF50-M-8TC parameters. This module contains two parameters: the sensor type and sampling frequency connected to the module.

Select all the two parameter options under this module, select the corresponding parameters according to user needs, and after the settings are completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below.
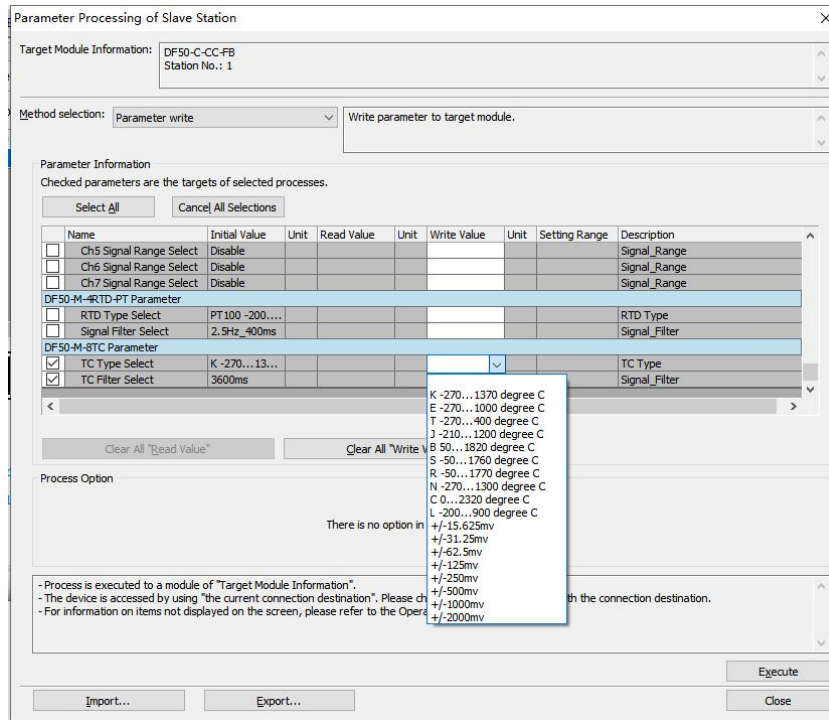
k. Modify the parameters of DF50-M-2CNT-PIL-24. This module contains 10 parameters for CH0 and CH1, including signal type, DI signal function, signal A filter time, signal B filter time, direction logic, counting mode, comparison function, bus abnormal counting action, cycle upper limit, and cycle lower limit. Select all 20 parameter options under this module and select corresponding parameters according to user needs. After setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
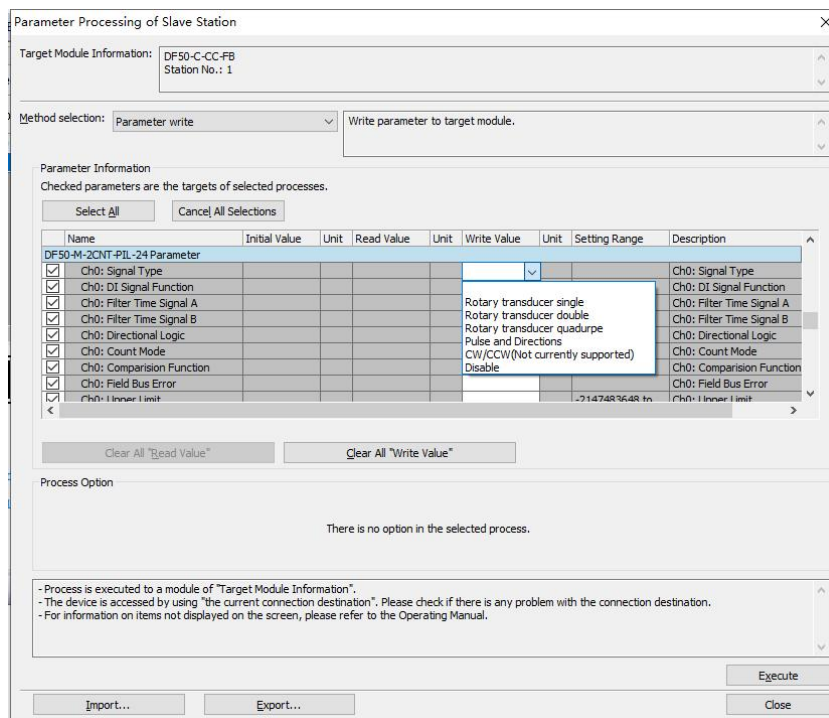
l. Modify the parameters of DF50-M-2CNT-PIL-5. This module contains 10 parameters for CH0 and CH1, including signal type, DI signal function, signal A filter time, signal B filter time, direction logic, counting mode, comparison function, bus abnormal counting action, cycle upper limit, and cycle lower limit. Select all 20 parameter options under this module and select corresponding parameters according to user needs. After setting, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the following figure.
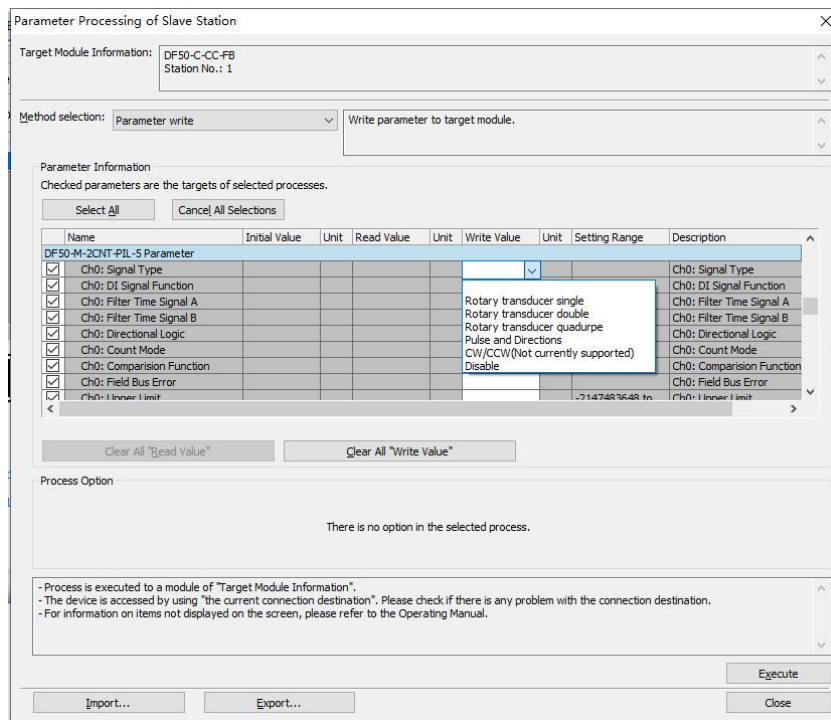
m. Modify the parameters of DF50-M-1COM-232/485/422. This module contains 4 parameters: "Port Configuration", "Free Mode Configuration", "Slave Mode Configuration" and "Master Mode Configuration". Select all 4 parameter options under this module and select the corresponding parameters according to user needs. For specific parameter definitions, please refer toChapter 3 Section 14.3After the settings are completed, click "Execute" to save the parameters to the coupler and download the parameters to the controller to make the parameters effective, as shown in the figure below.

> ➢ **Users can also select all module parameters that need to be configured and click "Execute" to set the parameters at once.**
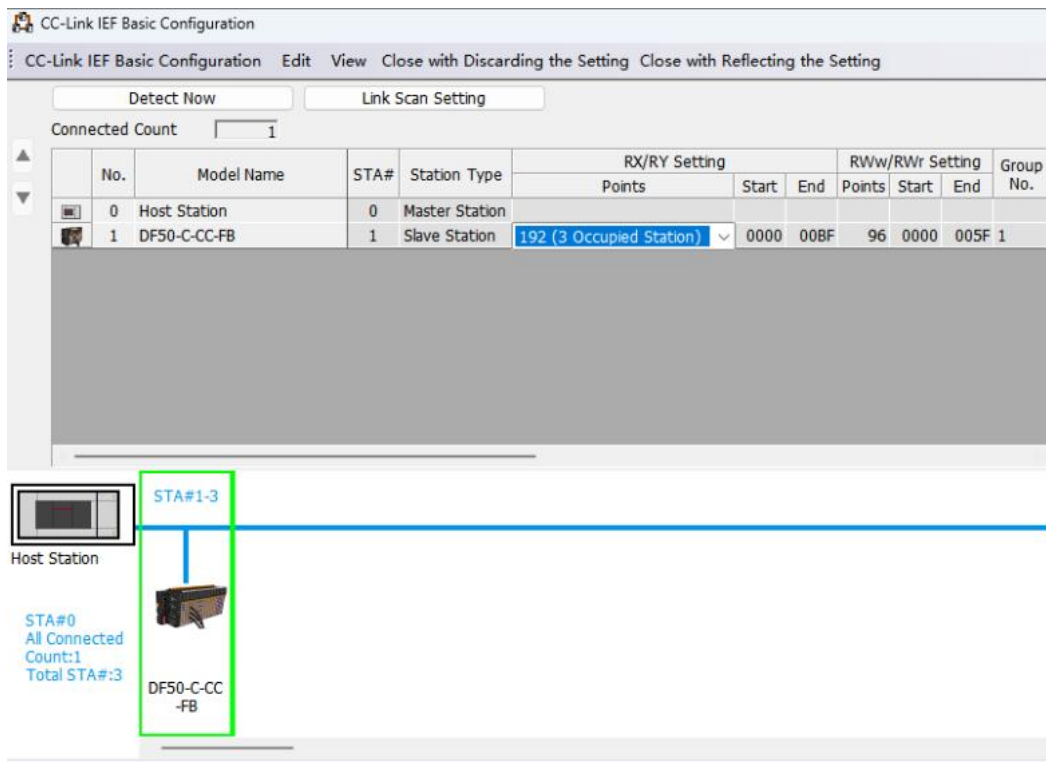
Save to the coupler; after the parameter setting is completed, it is valid for all modules of this type.

2.1.6 Digital Module Configuration Instructions

➢ This section uses DF50-C-CC-FB+DF50-M-16DI-P/N+DF50-M-32DI-P/N+DF50-M-16DO-N+

DF50-M-16DO-P+DF50-M-32DO-N+DF50-M-32DO-P+DF50-M-16DI-16DO-N+DF50-M-16DI-16DO-

P+DF50-M-4DO-R+DF50-M-4DO-P-2ATake the topology structure of as an example to explain the configuration of digital module. For detailed configuration process, please refer to Section 2.1.1 to Section 2.1.4.

➢ This topology only needs to set up 3 sites and 192 points. The starting addresses are as follows:

- RX: X100
- RY: Y100
- RWr: D1000
- RWw: D2000
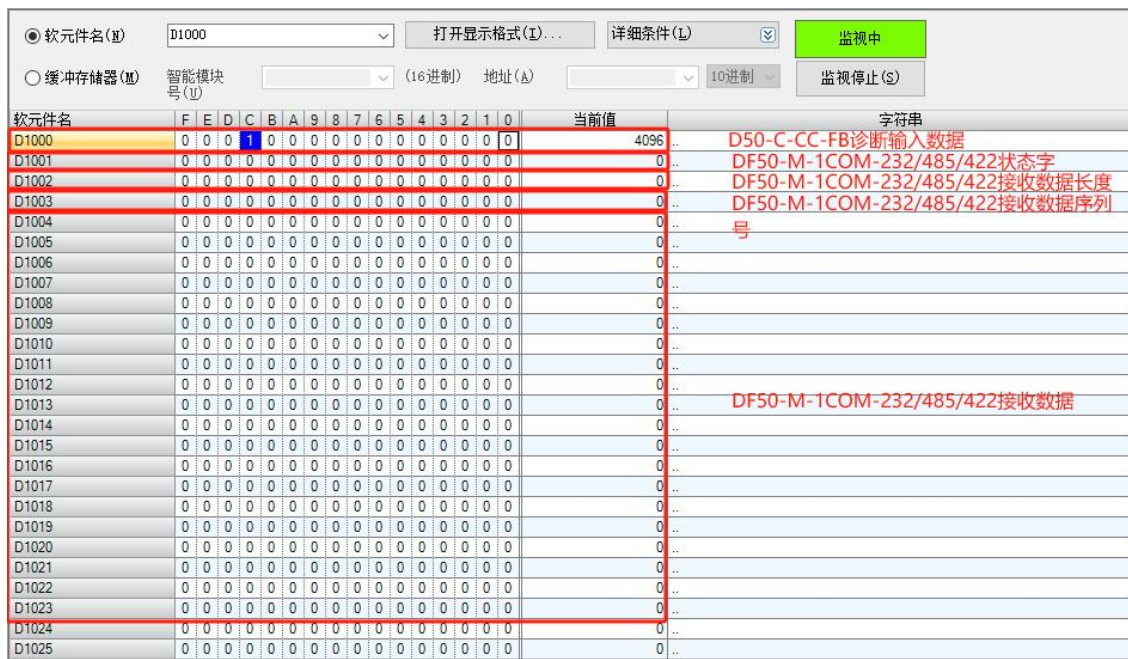

➢ according to Chapter 4, Section 1.2Module IO data software and channel description, each moduleInput and output dataAnd diagnostic information data address

The description is shown in the following table.

Software Configuration Instructions

Component	model	Occupied	Data size	Remark
RX	DF50-C-CC-FB	X100~X107	8bits	X100~X107:DI0~DI7
	DF50-M-16DI-P/N	X110~X117 X120~X127	16bits	X110~X117:DI0~DI7
				X120~X127:DI10~DI17
	DF50-M-32DI-P/N	X130~X137 X140~X147 X150~X157 X160~X167	32bits	X130~X137:DI0~DI7
				X140~X147:DI10~DI17
				X150~X157:DI20~DI27
				X160~X167:DI30~DI37
	DF50-M-16DI-16DO-N	X170~X177 X200~X207	16bits	X170~X177:DI0~DI7
				X200~X207:DI10~DI17
	DF50-M-16DI-16DO-P	Xtwenty one0~Xtwenty one7 Xtwenty two0~Xtwenty two7	16bits	Xtwenty one0~Xtwenty one7:DI0~DI7
				Xtwenty two0~Xtwenty two7:DI10~DI17
	DF50-M-4DO-P-2A	Xtwenty three0~X234	4bits	X230~X233:DI0~DI4
RY	DF50-M-16DO-N	Y100~Y107 Y110~Y117	16bits	Y100~Y107:DO0~DO7
				Y110~Y117:DO10~DO17
	DF50-M-16DO-P	Y120~Y127 Y130~Y137	16bits	Y120~Y127:DO0~DO7
				Y130~Y137:DO10~DO17
	DF50-M-32DO-N	Y140~Y127 Y150~Y137 Y160~Y127 Y170~Y137	32bits	Y140~Y147:DO0~DO7
				Y150~Y157:DO10~DO17
				Y160~Y167:DO20~DO27
				Y170~Y177:DO30~DO37
	DF50-M-32DO-P	Y200~Y207 Ytwenty one0~Ytwenty one7 Ytwenty two0~Ytwenty two7 Ytwenty three0~Ytwenty three7	32bits	Y200~Y207:DO0~DO7
				Ytwenty one0~Ytwenty one7:DO10~DO17
				Ytwenty two0~Ytwenty two7:DO20~DO27
				Ytwenty three0~Ytwenty three7:DO30~DO37
	DF50-M-16DI-16DO-N	Ytwenty four0~Ytwenty four7 Y250~Y257	16bits	Ytwenty four0~Ytwenty four7:DO0~DO7
				Y250~Y257:DO10~DO17
	DF50-M-16DI-16DO-P	Y260~Y267 Y270~Y277	16bits	Y260~Y267:DO0~DO7
				Y270~Y277:DO10~DO17
	DF50-M-4DO-R	Y300~Y303	4bits	Y300~Y303:DO0~DO4
	DF50-M-4DO-P-2A	Y310~Y313	4bits	Y310~Y313:DO0~DO4
R	DF50-C-CC-FB	D1000	1Word	Diagnostic information input data
Rw	DF50-C-CC-FB	D2000	1Word	Diagnostic information output data

Note: For description of diagnostic information data, please refer to Chapter 2, Section 1.3.1.

➢ The digital input data is displayed as shown in the figure below.

The digital output data settings are shown in the figure below.

The diagnostic input data is displayed as shown in the figure below.

The diagnostic output data settings are shown in the figure below.
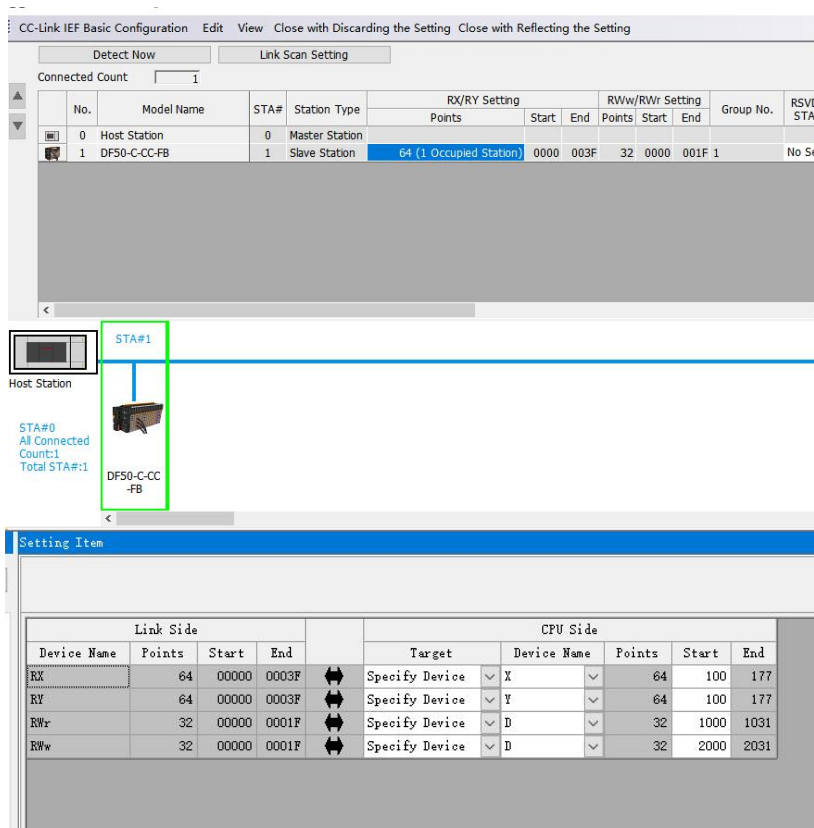
2.1.7　Analog Module Configuration Instructions

➢　This section uses DF50-C-CC-FB+DF50-M-4AI-UI-6+DF50-M-8AI-U-4+DF50-M-8AI-I-5+

Taking the topology of DF50-M-4AO-UI-6+DF50-M-8AO-U-4+DF50-M-8AO-I-5 as an example, the configuration of analog input and output modules is described. For detailed configuration process, please refer to Sections 2.1.1 to 2.1.4.

➢　This topology only needs to set up 1 site, 64 points, 32 input and output registers, and the starting addresses are as follows:

● RX: X100

● RY: Y100

● RWr: D1000

● RWw: D2000

➢　according to Chapter 4, Section 1.2 Module IO data software and channel description, each moduleInput and output dataAnd diagnostic information data address

The description is shown in the following table.

Component	model	Occupied	Data size	Remark
RX	DF50-C-CC-FB	X100~X107	8bits	X100~X107:DI0~DI7
	DF50-C-CC-FB	D1000	1Word	Diagnostic information input data
R	DF50-M-4AI-UI-6	D1001~D1004	4Words	AI0~AI3:D1001~D1004
	DF50-M-8AI-U-4	D1005~D1012	8Words	AI0~AI7:D1005~D1012

	DF50-M-8AI-I-5	D1013~D1020	8Words	AI0~AI7:D1013~D1020
Rw	DF50-C-CC-FB	D2000	1Word	Diagnostic information output data
	DF50-M-4AO-UI-6	D2001~D2004	4Words	AO0~AO3:D2001~D2004
	DF50-M-8AO-U-4	D2005~D2012	8Words	AO0~AO7:D2005~D2012
	DF50-M-8AO-I-5	D2013~D2020	8Words	AO0~AO7:D2013~D2020

Note: For description of diagnostic information data, please refer to.

➢ The digital input data is displayed as shown in the figure below.

➢ The analog input data is displayed as shown in the figure below.

➢ The analog output data is shown in the figure below.

2.1.8 Temperature Module Configuration Instructions

➢ This section takes the topology of DF50-C-CC-FB+DF50-M-4RTD-PT+DF50-M-8TC as an example to configure the temperature module.

For detailed configuration process, please refer to Section 2.1.1 to Section 2.1.4. This topology only needs to set up 1 site, 64 points, 32 input and output registers, and the starting addresses are as follows:

- RX: X100
- RY: Y100
- RWr: D1000
- RWw: D2000

➢ according to Chapter 4, Section 1.2 Module IO data software and channel description, each moduleInput and output dataAnd diagnostic information data address

The description is shown in the following table.

Component	model	Occupied	Data size	Remark
RX	DF50-C-CC-FB	X100~X107	8bits	X100~X107:DI0~DI7
R	DF50-C-CC-FB	D1000	1Word	Diagnostic information input data
	DF50-M-4RTD-PT	D1001~D1004	4Words	AI0~AI3:D1001~D1004
	DF50-M-8TC	D1005~D1012	8Words	AI0~AI7:D1005~D1012
Rw	DF50-C-CC-FB	D2000	1Word	Diagnostic information output data
	DF50-M-8TC	D2001~D2004	4Words	Compensation data of channel

Note: For description of diagnostic information data, please refer to Chapter 2, Section 1.7.1.The 8 compensation data of DF50-M-8TC are used to compensate for the error caused by the accuracy of the sensor itself.

➢ The digital input data of DF50-C-CC-FB is shown in the figure below.
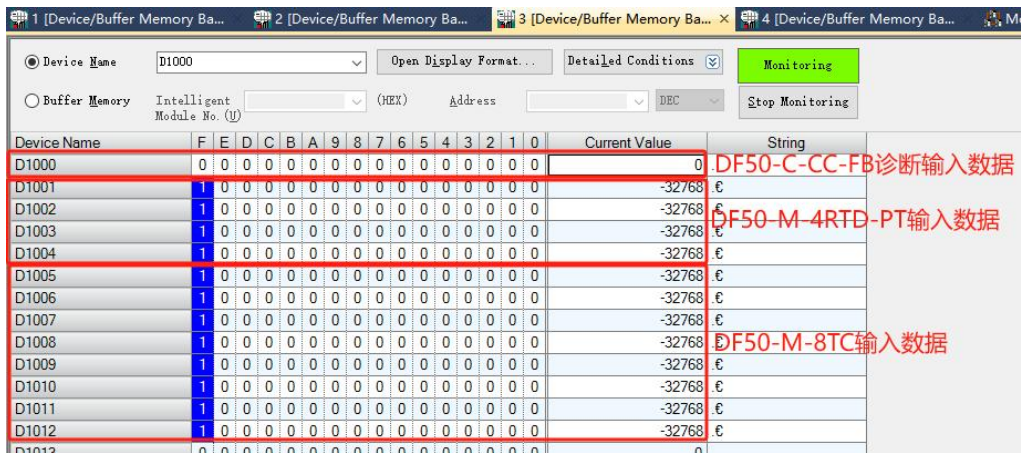
DF50 series I/O

DF50-C-CC-FB数字量输入显示

➢ The analog input data is displayed as shown in the figure below.

DF50-C-CC-FB诊断输入数据

DF50-M-4RTD-PT输入数据

DF50-M-8TC输入数据

➢ The analog output data settings are shown in the figure below.

DF50-C-CC-FB诊断输出数据

DF50-M-8TC模块通道补偿数据

2.1.9 Encoder Pulse Counting Module Configuration Instructions

This section takes the topology of DF50-C-CC-FB+DF50-M-2CNT-PIL-24+DF50-M-2CNT-PIL-5 as an example to describe the configuration of the encoder pulse counting module. For detailed configuration process, please refer to Sections 2.1.1 to 2.1.4. For module configuration parameters, please refer to Section 2.1.5 This topology only needs to set up 1 site, 64 points, 32 input and output registers, and the starting addresses are as follows:

- RX: X100
- RY: Y100
- RWr: D1000
- RWw: D2000

➢ according to Chapter 4, Section 1.2 Module IO data software and channel description, each moduleInput and output dataAnd diagnostic information data address
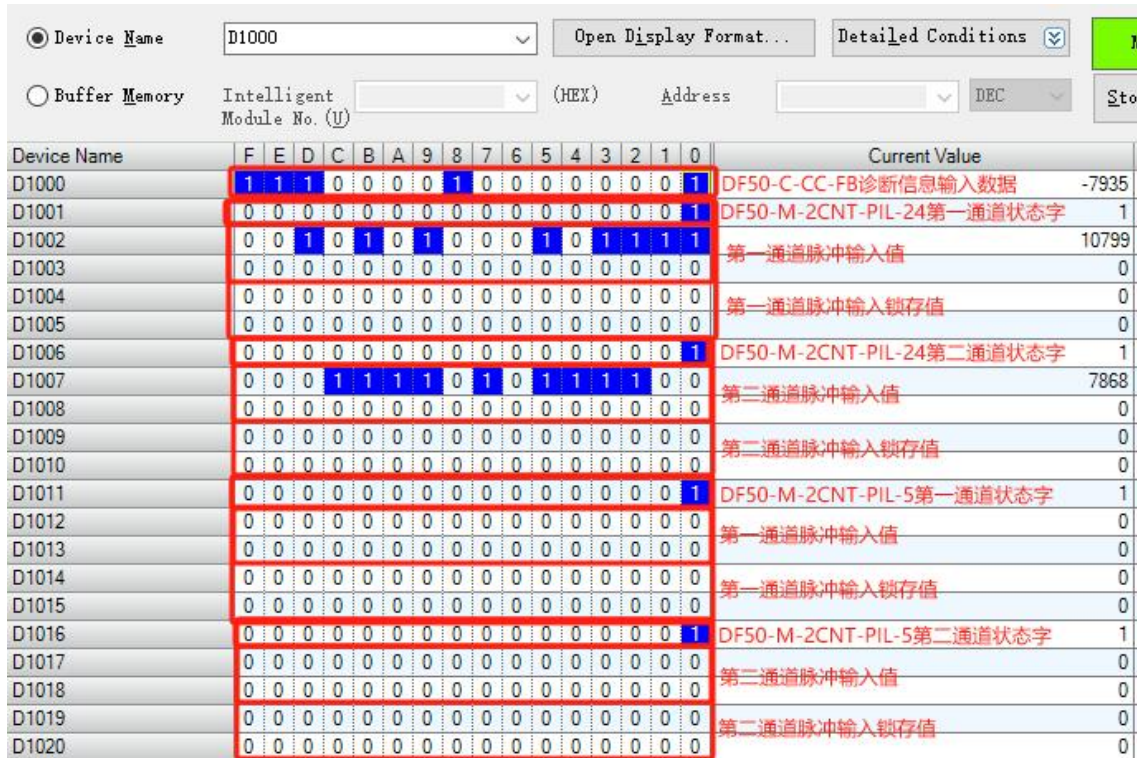
The description is shown in the following table.

Component	model	Occupied	Data size	Remark
RX	DF50-C-CC-FB	X100~X107	8bits	X100~X107:DI0~DI7
R	DF50-C-CC-FB	D1000	1Word	Diagnostic information input data
	DF50-M-2CNT-PIL-24	D1001~D1010	10Words	D1001: Status word of the first channel D1002~D1003: The first channel pulse input value D1004~D1005: The first channel pulse input latch value D1006: Second channel status word D1007~D1008: Second channel pulse input value D1009~D1010: Second channel pulse input latch value
	DF50-M-2CNT-PIL-5	D1011~D1020	10Words	D1011: First channel status word D1012~D1013: First channel pulse input value D1014~D1015: The first channel pulse input latch value D1016: Second channel status word D1017~D1018: Second channel pulse input value D1019~D1020: Second channel pulse input latch value
Rw	DF50-C-CC-FB	D2000	1Word	Diagnostic information output data
	DF50-M-2CNT-PIL-24	D2001~D2006	6Words	D2001: First channel control word D2002~D2003: First channel pulse comparison value output D2004: Second channel control word D2005~D2006: Second channel pulse comparison value output

			D2007: First channel control word D2008~D2009: First channel pulse comparison value output D2010: Second channel control word D2011~D2012: Second channel pulse comparison value output
DF50-M-2CNT-PIL-5	D2007~D2012	6Words	
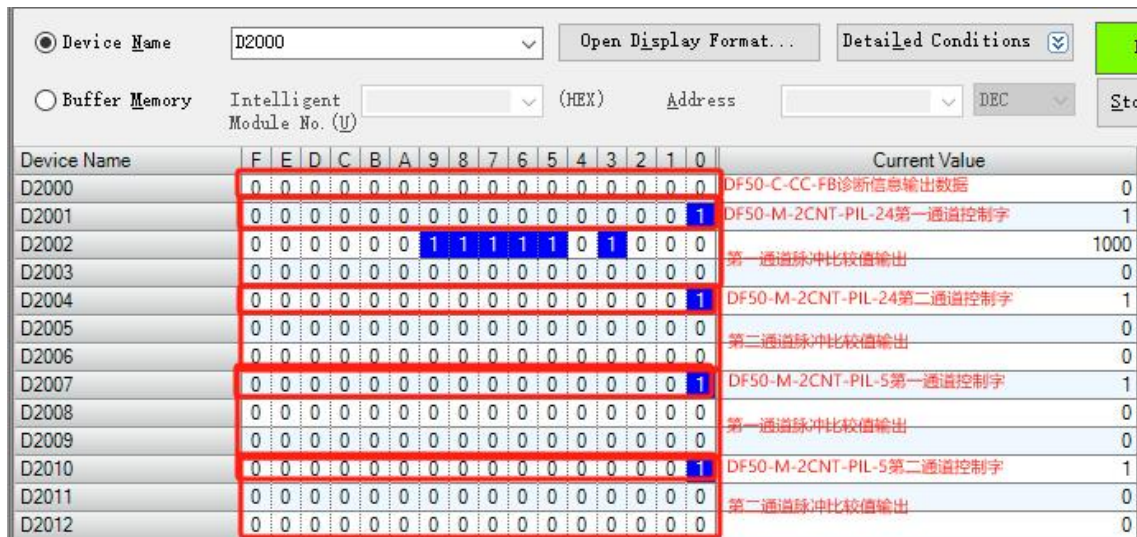
Note: For description of diagnostic information data, please refer toChapter 2, Section 1.3.1.

➢ The encoder pulse counting module input data is displayed as shown in the figure below.

➢ The encoder pulse counting module output data is shown in the figure below.

2.1.10 Serial port module configuration instructions

➢ This section takes the topology of DF50-C-CC-FB+DF50-M-1COM-232/485/422 as an example to configure the serial port module.

For detailed configuration process, please refer to Section 2.1.1 to Section 2.1.4. This topology only needs to set up 1 site, 64 points, 32 input and output registers, and the starting addresses are as follows:

- RX: X100
- RY: Y100
- RWr: D1000
- RWw: D2000

➢ according to Chapter 4, Section 1.2Module IO data software and channel description, each moduleInput and output dataAnd diagnostic information data address

The description is shown in the following table.

Component	model	Occupied address	Data size	Remark
RX	DF50-C-CC-FB	X100~X107	8bits	X100~X107:DI0~DI7
R	DF50-C-CC-FB	D1000	1Word	Diagnostic information input
	DF50-M-1COM-232/485/422	D1001~D10twenty	twenty	Serial port module input data
Rw	DF50-C-CC-FB	D2000	1Word	Diagnostic information
	DF50-M-1COM-232/485/422	D2001~D20twenty	twenty	The serial port module

Note: For description of diagnostic information data, please refer to Chapter 2, Section 1.3.1.The definition of input and output data in different modes of DF50-M-1COM-232/485/422 is different. For detailed description, please refer to Chapter 3 Section 14.4.

➢ The free mode input data is displayed as shown below:

➢ The free mode output data is shown in the following figure:

➢ The input data in master mode is shown in the figure below:

➢ The output data in master mode is shown in the figure below:

➢ The input data of slave mode is shown as follows:

➢ The output data in slave mode is shown in the figure below: