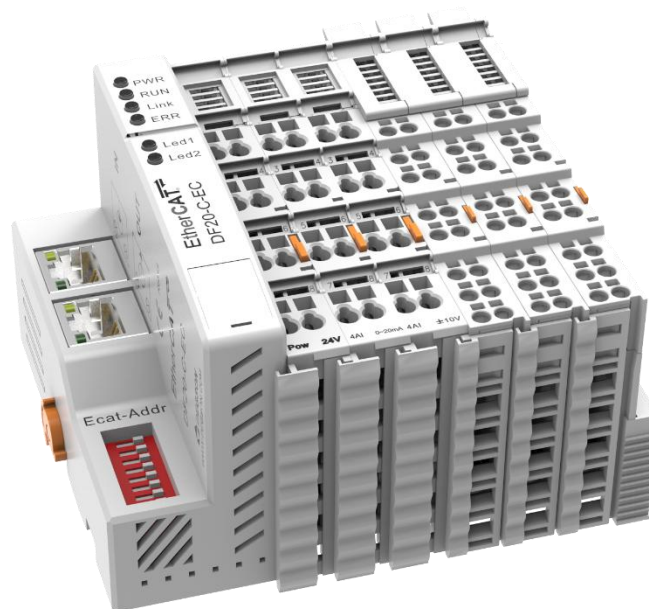


DF20 series Card type IO module

User Manual

DF20 series - card IO



Preface

➤ Information introduction

- This product supports Profinet, EtherCAT, Modbus TCP/IP, CC-LINK IE Field Basic, EtherNet IP and other communication protocols, and has the automatic scanning function. One adapter communication module unit can connect up to 32 IO modules. When the power consumption of the module is large, the extended power module is required to supply power.
- This manual describes the mechanical installation of the product, electrical installation, and module programming examples.

■ Version change logs

Revision date	Version	Changed content
2024-09	1.1	Adapt V102 coupler, and add adaptation function module
2023-11	The first edition of the manual was released	

■ Regarding access to manuals

- This manual is not shipped with the product. If you need to obtain an electronic PDF file, you can obtain it in the following ways:
- Contact our technical team for product brochures.

■ warranty statement

- In case of failure or damage of the product under normal use, DEGSON is responsible for a 24 months warranty (from the date of delivery, the barcode on the machine body shall prevail, and if there is a contract agreement, the agreement shall prevail). Over 24 months, maintenance fees will be charged. Within 24 months, the product damage caused by the following conditions will be charged for maintenance.
- Damage to the product caused by operating the product not in accordance with the instructions in the manual.
- Damage to the product caused by fire, flood, or abnormal voltage.
- Damage to the product caused by using the product for a non-normal function.
- Damage caused by exceeding the specified range of use of the product.
- Force majeure (natural disasters, earthquakes, lightning) factors caused by secondary damage to the product. The relevant service costs are calculated in accordance with the manufacturer's unified standards, if any contract, the principle of contract priority.

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1. Product mounting and dismounting

1. Installation method

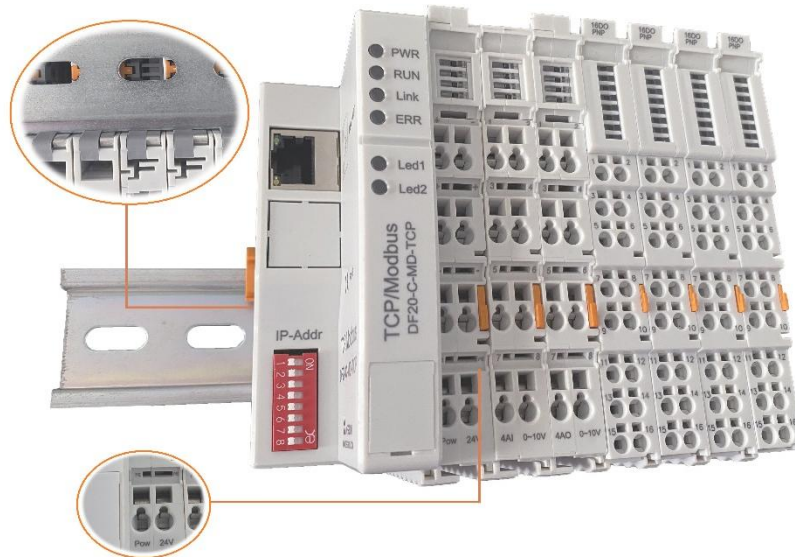
- When installing the module, the DIN rail lock at the bottom of the module can be safely and reliably installed on the 35 mm DIN rail. When installing the module, you need to align the gap, push the module to the DIN bayonet in the direction of the arrow, and place the module on the DIN rail. .
- In addition, when mounting the adapter, there is a manual catch on the left side for locking the rail.



2. Grounding protection

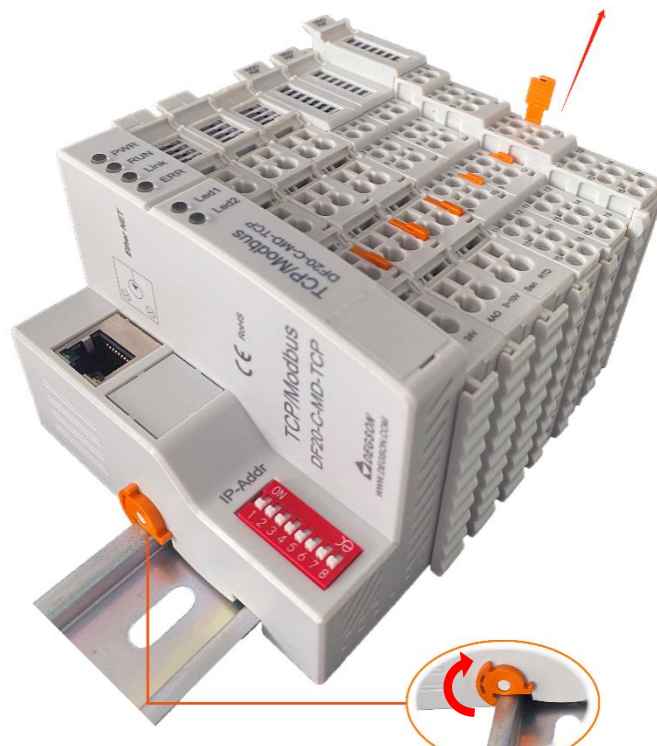
- There is a metal spring on the back of the module for effective grounding with the guide rail.

The metal spring is internally connected to the ground PE of the adapter module.



3. Disassembly method

- When disassembling the module, you should first remove all signal cables or power cables from the module, and then pull the snap pins in the direction of the arrows (the yellow parts in the following figure), and when disassembling the adapter module, you also need to open the rail lock counterclockwise.



4. Notes

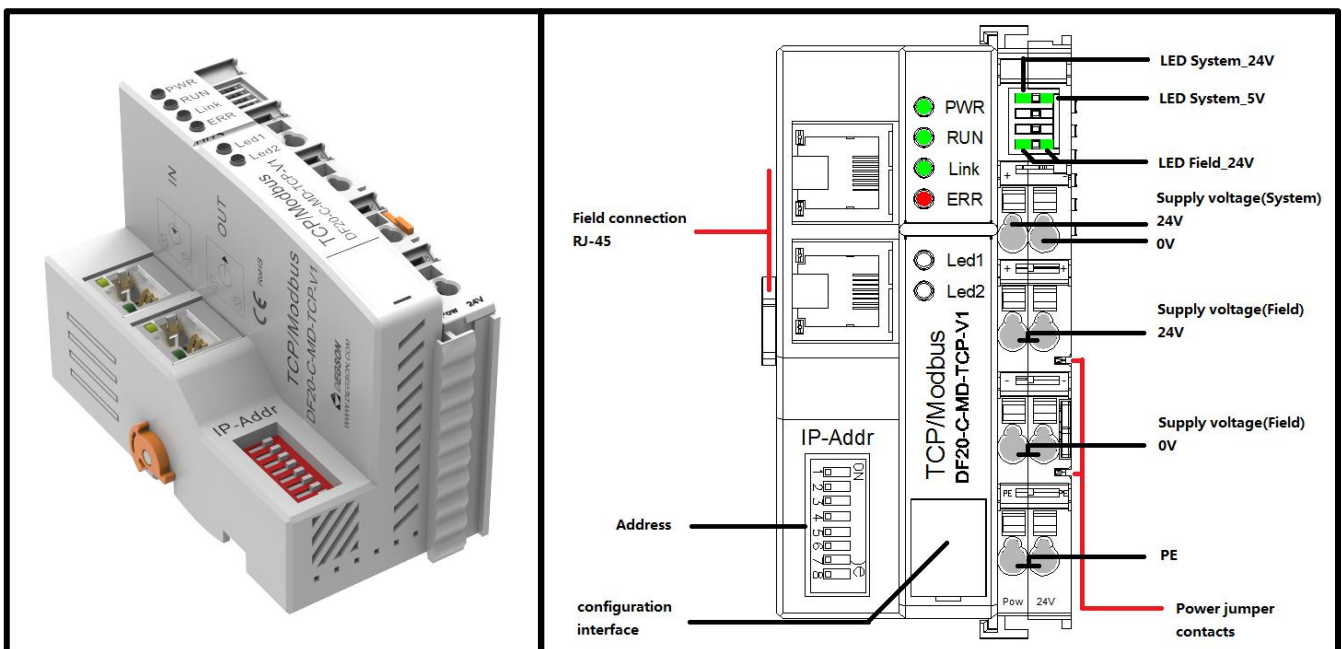
- If you encounter a module is difficult to install, do not use brute force to install, so as not to damage the current module or other modules; modules should be removed from the guide rail, check whether the module there are abnormalities (such as foreign body blockage, etc.), to confirm that there is no problem, and then plug and unplug.

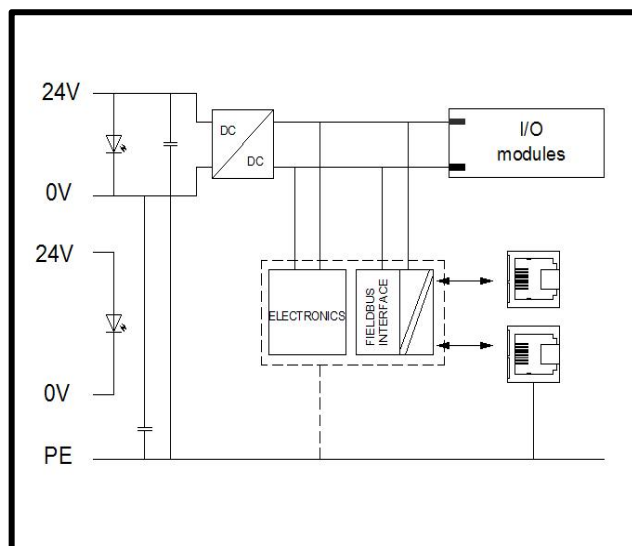
2. Fieldbus adapters

fieldbus systems	Description	Model	Page
 <i>ModbusTCP</i>	Modbus bus, 1 RJ45, expandable 16 modules, 24VDC	DF20-C-MD-TCP-V1	21

◆ Modbus TCP fieldbus adapter/dual network port (DF20-C-MD-TCP-V1)

- DF20-C-MD-TCP-V1 The fieldbus adapter is connected to the MODBUS fieldbus as a slave station. Modbus has become the industry standard of communication protocol in the industrial field. It can automatically configure and generate local process images including analog quantities, digital quantities and special function modules. Analog quantity module and special function module transmit data in the form of words or bytes, and digital quantity module transmits data in the form of bits.
- This fieldbus adapter is designed for The field bus communication of MODBUS network is designed.
- It is also equipped with a dual-port switch that makes it easy to create a wire fabric without using any other network components.





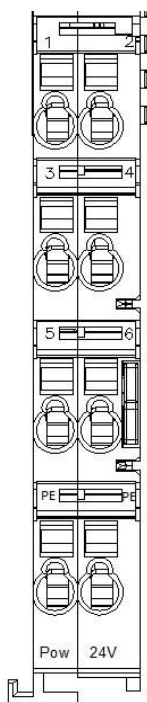
1. Specification parameters

technical information	
Communications	Modbus TCP
maximum bus segment length	100M
transmission medium	Twisted pair S-UTP; 100Ω; Category 5
transmission rate	10/100Mbps
Maximum number of modules without bus expansion	32
Support Modbus function code	02,03,05,06,15,16
address mapping	Support
address range	1~254
PDO data	1024 bytes
bus address setting	Modbus TCP specification, dial switch
Connection method	By means of plug-in connectors (CAGE CLAMP® WIRING UNITS)
Operating voltage	24VDC (-15%~+20%)
No-load current	<150mA
providing internal system voltage	5VDC
maximum internal system supply current	2000mA
field-side supply voltage	24V~32VDC; Cross contact point via power supply
Provides on-site measurement of maximum current	5A
Isolation	500V system/site electrical isolation
wiring parameters	
Connection technology: communications/fieldbus	Modbus TCP: 2 x RJ-45
Connection technology: system power supply	2 x Cage spring connection unit
Connection technology: Field power supply	6 x Cage spring connection unit
Type of connection (1)	system/site power supply
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	

Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC - Radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

2. Hardware interface

● Wiring Terminal Definition

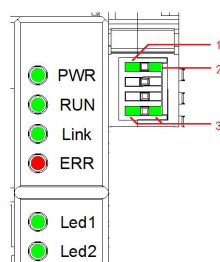


terminal serial number	Signal	Description
1	Power supply 24V	Providing power to the system
2	Power supply 0V	
3	Power supply 24V	Provide IO load power supply
4		
5	Power supply 0V	
6		
PE	Grounding	module grounding
PF		

Note: It is recommended to use two 24V power supplies isolated from each other to provide two

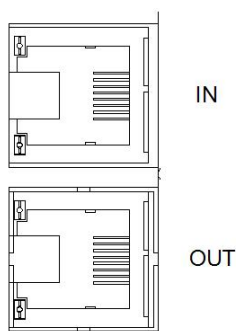
power supplies for the coupler respectively to achieve the optimal anti-interference performance.

● LED indicator definition



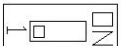
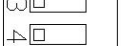
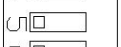
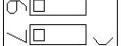
Indicator light	State	Meaning
PWR	The green light is always on	The power supply is functioning properly
	Green light out	The power supply is operating abnormally
RUN	The green light is always on	The coupler is functioning properly
	Green light out	the coupler is operating abnormally
Link	Green light blinking	module is functioning properly
	Green light out	module is running abnormally
ERR	The red light is always on	Abnormal communication between coupler and module
	Red light out	coupler-to-module communication without error
Led1	Green light blinking	There is data communication on network port 1
Led2	Green light blinking	There is data communication on network port 2
1	The green light is always on	The power supply to the system is normal
	Green light out	Abnormal power supply to the system power supply
2	The green light is always on	5V power supply at golden finger is normal
	Green light out	Abnormal 5V power supply at golden finger
3	The green light is always on	The site power supply is normal
	Green light out	Abnormal power supply from the site power supply

● RJ45 interface



It is used to establish communication with the upper computer. Dual RJ45 ports can easily create a linear structure without using any other network components.

● DIP switches

	OFF	ON
	0	1
	0	2
	0	4
	0	8
	0	16
	0	32
	0	64
	0	128

- As shown in the figure, the ModbusTCP adapter module is equipped with a set of dial switches. The dial switch has 8 bits in total, bit 1, bit 2, bit 3, bit 4, bit 5, bit 6, bit 7, and bit 8. Each bit represents a value. The position pushed to ON represents 1, 2, 4, 8, 16, 32, 64, and 128 in turn. The sum of the values represented by the bits turned to ON is the address code of the machine.
- Address 11 is: 1 (bit 1) + 2 (bit 2) + 8 (bit 4) = 11, address 30 is: 2 (bit 2) + 4 (bit 3) + 8 (bit 4) + 16 (bit 5) = 30; dial code all dial down on behalf of 0.
- The DIP switch can be used to set the last byte of the adapter module IP address, that is, the IP address of segment D of IP ground A: B: C: D

The ABC section of can be configured through the web page.

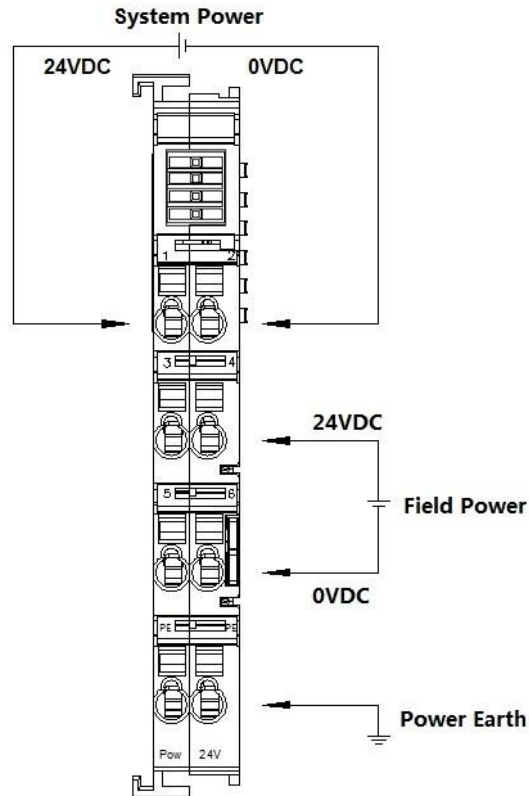
- In particular, when the dial switch is set to 0 or 255, the ABCD segment of the adapter IP address uses all the information configured by the web page,

When the dial switch is set to 254, the adapter IP address is fixed to 192.168.1.254. Therefore, when the IP address is lost, forgotten or other abnormal conditions occur, you can set the dial switch to 254, and use the 192.168.1.254 address to enter the web page configuration to reconfigure the network information of the adapter.

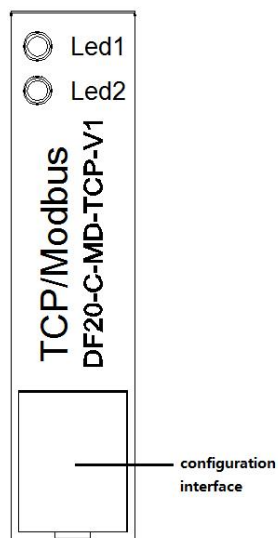
- **When leaving the factory, the DIP switch is set to 0, and the IP address is set to 192.168.1.1.**

● Wiring Diagram

Note: Only the right half of the adapter is shown here for viewing purposes.



● configure the interface



Set up the configuration interface to facilitate the program upgrade of the adapter.

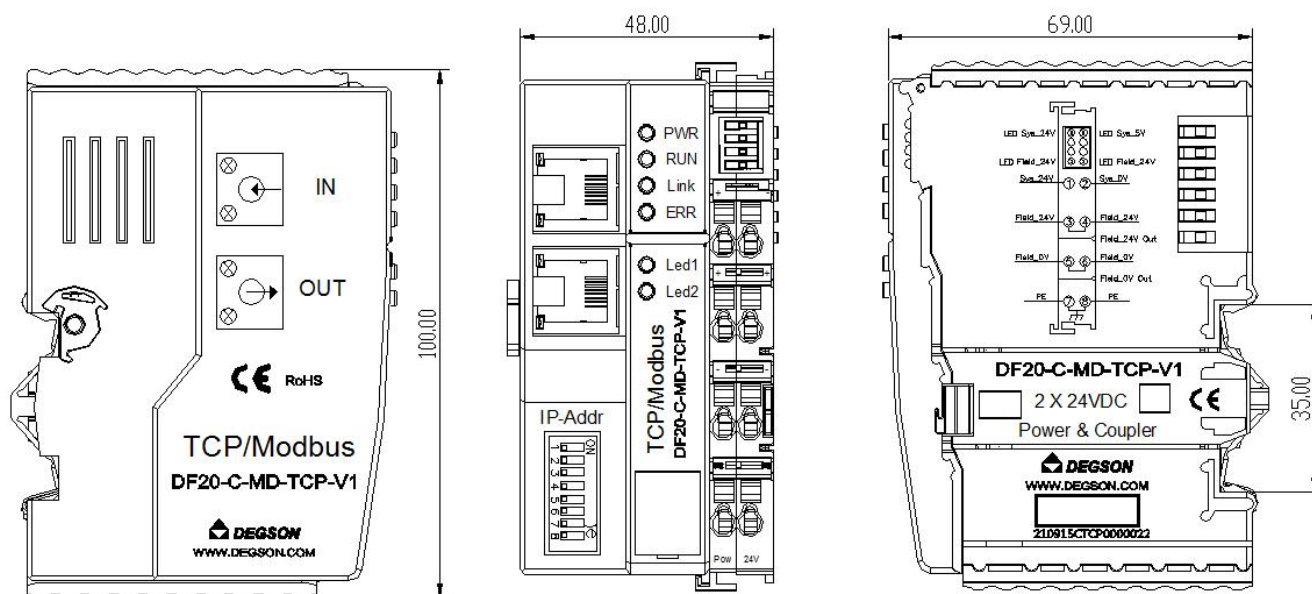
Note: Non-professionals and authorized personnel are prohibited from using this interface to

avoid programmatic problems.

3. Mechanical installations

- mounting dimensions

The installation dimension information is shown in the following figure, in mm:



4. Adapter register allocation description

- System diagnostic information, occupying 69 holding registers, mainly includes information on the number of modules, adapter disconnect output attributes, module Error information, module type information, Modbus configuration connection time, module response time, etc. Data structure definition of holding register block:

HoldReg	Byte	Format	Description
0	IB0	Word	ModuleNum
	IB1		
1	IB2	Word	Output on Fieldbus Error
	IB3		
2	IB4	Word	ModuleError
	IB5		
3	IB6	Word	No.1 Module Type Info
	IB7		
4	IB8	Word	No.2 Module Type Info
	IB9		
⋮			
34	IB68	Word	No.32 Module Type Info
	IB69		
35	IB70	Word	Modbus Connect Time[16..31]
	IB71		
36	IB72	Word	Modbus Connect Time[0..15]
	IB73		
37	IB74	Word	No.1 Modbus Polling Time
	IB75		
38	IB76	Word	No.2 Modbus Polling Time
	IB77		
⋮			
68	IB136	Word	No.32 Modbus Polling Time
	IB137		

Sys_DiagInfo_HoldRegBlock
Size:69

- ModuleNum: number of modules, number of modules attached to the adapter. For example, if there are 5 modules attached to the bus, the value of ModuleNum is 5;
- Output on Fieldbus Error: adapter disconnection output attribute (1: disconnection hold output 0: disconnection clear output);
- ModuleError: module error information (high 8-bit 1: error 0: no error low 8-bit module serial number, such as the internal total number of the first module

Line communication error, error code is 0x0101, the second module communication error, error code is 0x0102, and so on);

- Module Type Info: module ID value, module type ID comparison is shown in the table

Module model	Module
DF20-M-8DI-N	0x0181

DF20-M-8DI-P	0x0182
DF20-M-16DI-P	0x0192
DF20-M-16DI-N	0x0191
DF20-M-32DI-P	0x01A2
DF20-M-32DI-N	0x01B1
DF20-M-4DO-R	0x018E
DF20-M-8DO-N	0x0183
DF20-M-8DO-P	0x0184
DF20-M-16DO-P	0x0194
DF20-M-16DO-N	0x0193
DF20-M-32DO-P	0x01A4
DF20-M-32DO-N	0x01A3
DF20-M-8DIO-P	0x019A
DF20-M-8DIO-N	0x0199
DF20-M-4AI-U-0	0x01A5
DF20-M-4AI-U-1	0x01B5
DF20-M-4AI-I-2	0x01A6
DF20-M-4AI-I-3	0x01B6
DF20-M-4AI-U-4	0x01C5
DF20-M-4AI-I-5	0x01C6
DF20-M-8AI-U-4	0x01D5
DF20-M-8AI-I-5	0x01D6
DF20-M-4AO-U-0	0x0187
DF20-M-4AO-U-1	0x0197
DF20-M-4AO-I-2	0x0188
DF20-M-4AO-I-3	0x0198
DF20-M-4AO-U-4	0x01A7
DF20-M-4AO-I-5	0x01A8
DF20-M-8AO-U-4	0x01B8
DF20-M-8AO-I-5	0x01B7
DF20-M-2LC-S-5	0x01A9
DF20-M-2RTD-PT	0x018A
DF20-M-4RTD-PT	0x01B9
DF20-M-4TC-KETJ	0x018B
DF20-M-8TC-KETJ	0x01BB
DF20-M-1CNT-EL-4	0x019C
DF20-M-1CNT-EL-5	0x019B
DF20-M-2CNT-PIL-4	0x01A1
DF20-M-2CNT-PIL-5	0x01A0
DF20-M-2CNT-EL-5	0x01AE
DF20-M-2CNT-EL-4	0x01AF

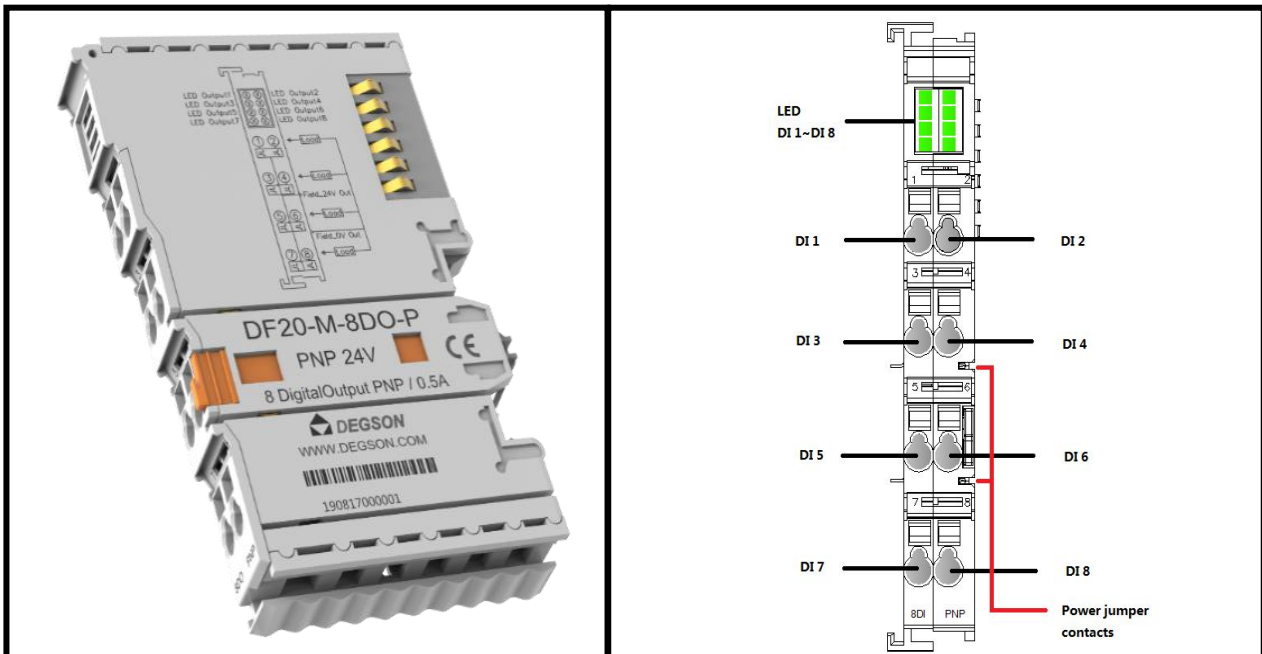
3、 Expansion I/O module

Function	Description	Model
digital modules	Digital input, 8 inputs, PNP, 24VDC	DF20-M-8DI-P
digital modules	Digital quantity transmission, 8 inputs, NPN, 24VDC	DF20-M-8DI-N
digital modules	Digital quantity transmission, 16 input, PNP, 24VDC	DF20-M-16DI-P
digital modules	Digital input, 16 input, NPN, 24VDC	DF20-M-16DI-N
digital modules	Digital input, 32 input, PNP, 24VDC	DF20-M-32DI-P
digital modules	Digital input, 32 input, NPN, 24VDC	DF20-M-32DI-N
digital modules	Digital output, 4 relay output, DC24V	DF20-M-4DO-R
digital modules	Digital output, 8 outputs, PNP, 24VDC	DF20-M-8DO-P
digital modules	Digital output, 8 outputs, NPN, 24VDC	DF20-M-8DO-N
digital modules	Digital output, 16 output, PNP, 24VDC	DF20-M-16DO-P
digital modules	Digital output, 16 output, NPN, 24VDC	DF20-M-16DO-N
digital modules	Digital output, 32 output, PNP, 24VDC	DF20-M-32DO-P
digital modules	Digital output, 32 output, NPN, 24VDC	DF20-M-32DO-N
digital modules	8-channel digital input+8-channel digital output NPN	DF20-M-8DIO-N
digital modules	8-channel digital input+8-channel digital output PNP	DF20-M-8DIO-P
analog modules	Analog input, 4-channel, voltage type, - 10V~10V	DF20-M-4AI-U-0
analog modules	Analog input, 4-channel, voltage type, 0V~10V	DF20-M-4AI-U-1
analog modules	Analog input, 4-channel, voltage type, $\pm 10V/0\sim 10V$	DF20-M-4AI-U-4
analog modules	Analog input, 8 channels, voltage type, $\pm 10V/0\sim 10V$	DF20-M-8AI-U-4
analog modules	Analog input, 4-channel, current type, 0~20mA	DF20-M-4AI-I-2
analog modules	Analog input, 4-channel, current type, 4~20mA	DF20-M-4AI-I-3
analog modules	Analog input, 4-channel, current type, 0~20mA/4~20mA	DF20-M-4AI-I-5
analog modules	Analog input, 8 channels, current type, 0~20mA/4~20mA	DF20-M-8AI-I-5
analog modules	Analog output, 4-channel, voltage type, - 10V~10V	DF20-M-4AO-U-0
analog modules	Analog output, 4-channel, voltage type, 0V~10V	DF20-M-4AO-U-1
analog modules	Analog output, 4-channel, voltage type, $\pm 10V/0\sim 10V$	DF20-M-4AO-U-4
analog modules	Analog output, 4-channel, current type, 0~20mA	DF20-M-4AO-I-2
analog modules	Analog output, 4 channels, current type, 4~20mA	DF20-M-4AO-I-3

analog modules	Analog output, 4-channel, current type, 0~20mA/4~20mA	DF20-M-4AO-I-5
Bridge Module	Bridge measurement, 2 channels, 0~10mV	DF20-M-2LC-S-5
Temperature modules	Thermal resistance measurement, 2 channels, PT100/PT1000	DF20-M-2RTD-PT
Temperature modules	Thermal resistance measurement, 4-channel, PT100/PT1000	DF20-M-4RTD-PT
Temperature modules	Thermocouple measurement, 4-channel, K/E/T/J	DF20-M-4TC-KETJ
Temperature modules	Thermocouple measurement, 8 channels, K/E/T/J	DF20-M-8TC-KETJ
Pulse counting module	Encoder input/position latch, 1 channel, 24VDC	DF20-M-1CNT-EL-4
Pulse counting module	Encoder input/position latch, 1 channel, 5VDC	DF20-M-1CNT-EL-5
Pulse counting module	Pulse count input/pulse latch, 2 channels, 24VDC	DF20-M-2CNT-PIL-4
Pulse counting module	Pulse count input/pulse latch, 2-channel, 5VDC	DF20-M-2CNT-PIL-5
Pulse counting module	2-channel encoder/pulse counting module, 5V	DF20-M-2CNT-EL-5
Pulse counting module	2-channel encoder/pulse counting module, 24V	DF20-M-2CNT-EL-4
Voltage distribution modules	Voltage distribution/24VDC to 5VDC, isolated	DF20-M-DC-U-5
Voltage distribution modules	Voltage distribution/24VDC to 5VDC, non isolated	DF20-M-DC-UD-5
Voltage distribution modules	Voltage distribution/16 channels/24VDC	DF20-M-DC-U-24
Voltage distribution modules	Voltage distribution/16 channels/0VDC	DF20-M-DC-U-0
extension module	8-channel/two-wire expansion	DF20-M-T-8L

8-channel digital input/24VDC/PNP (DF20-M-8DI-P)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 8-channel digital input, PNP high level is valid.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- Electrical isolation between the field level and the system level.
- The protection grade is IP20.

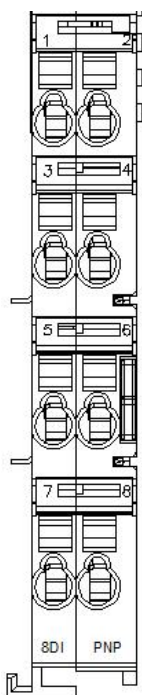


1. Specification parameters

technical information	
Number of digital inputs	8
Total number of channels (modules)	8
signal type	Voltage
voltage signal type	24VDC PNP
connection type	1-wire
Input Characteristics	High level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Input Current (Typical)	3mA
signal (0) voltage range	0~4V
Signal (1) voltage range	18~32V
data size	8 bits
Supply voltage (system)	5VDC; Through data contact
Power consumption	<14mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	8 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

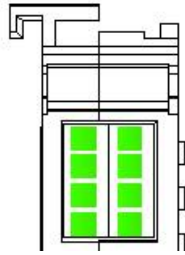
2. Hardware interface

Definition of Terminal Block



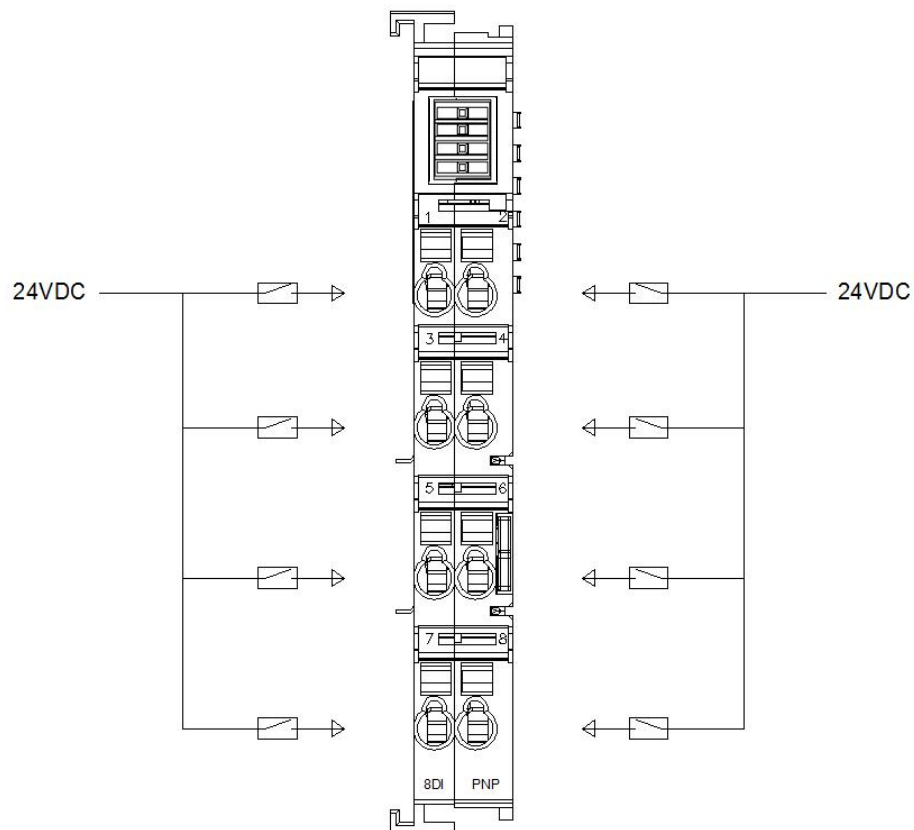
terminal serial number	Signal	Description
1	DI 1	High level signal input
2	DI 2	
3	DI 3	
4	DI 4	
5	DI 5	
6	DI 6	
7	DI 7	
8	DI 8	

LED indicator definition



1~8 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring diagrams



3. Process data definitions

- The 8-channel PNP digital input module occupies 1 holding register and 8 discrete input status registers.
- Holding Register Block Data Structure Definition.

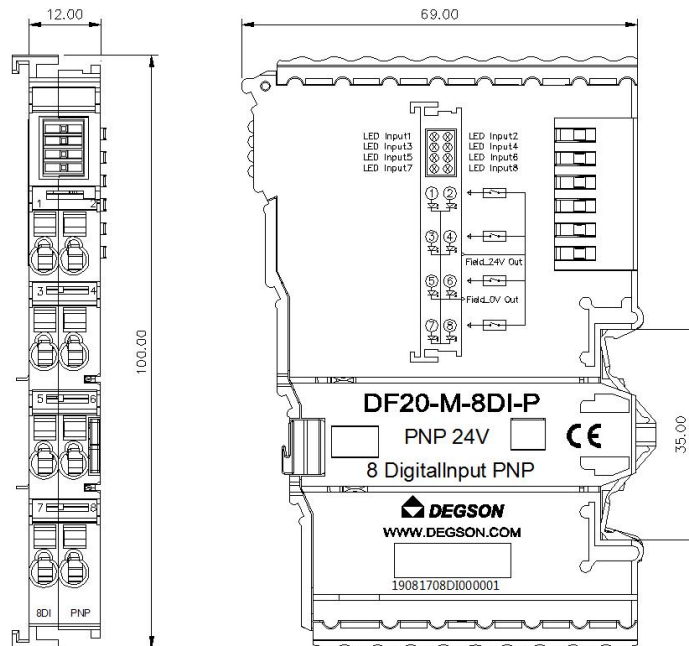
HoldReg	Byte	Format	Bit	Description	DF20-M-8DI-P_HoldRegBlock Size:1
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	\	
			IX1.1	\	
			IX1.2	\	
			IX1.3	\	
			IX1.4	\	
			IX1.5	\	
			IX1.6	\	
			IX1.7	\	

- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-8DI-P_DiscRegBlock Size:8
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	

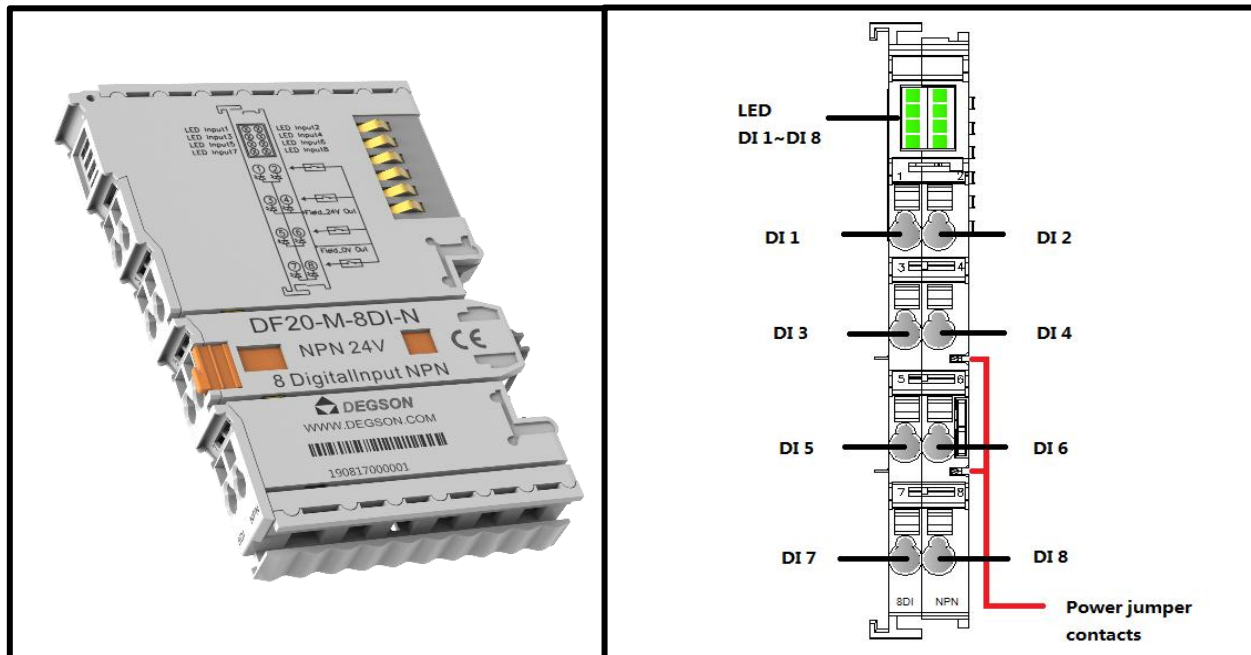
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel digital input/24VDC/NPN (DF20-M-8DI-N)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 8-channel digital input, NPN low level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- Electrical isolation between the field level and the system level.
- The protection grade is IP20.

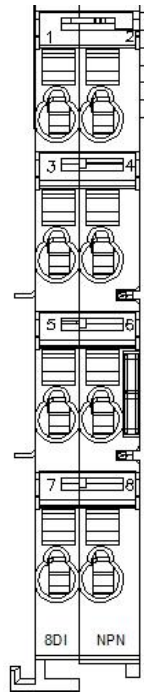


1. Specification parameters

technical information	
Number of digital inputs	8
Total number of channels (modules)	8
signal type	Voltage
voltage signal type	24VDC NPN
connection type	1-wire
Input Characteristics	Low level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Input Current (Typical)	3mA
signal (0) voltage range	18~32V
Signal (1) voltage range	0~4V
data size	8 bits
Supply voltage (system)	5VDC; Through data contact
Power consumption	<14mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	8 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

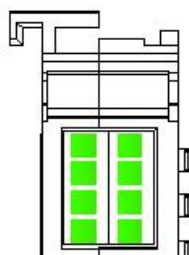
2. Hardware interface

Wiring Terminal Definition



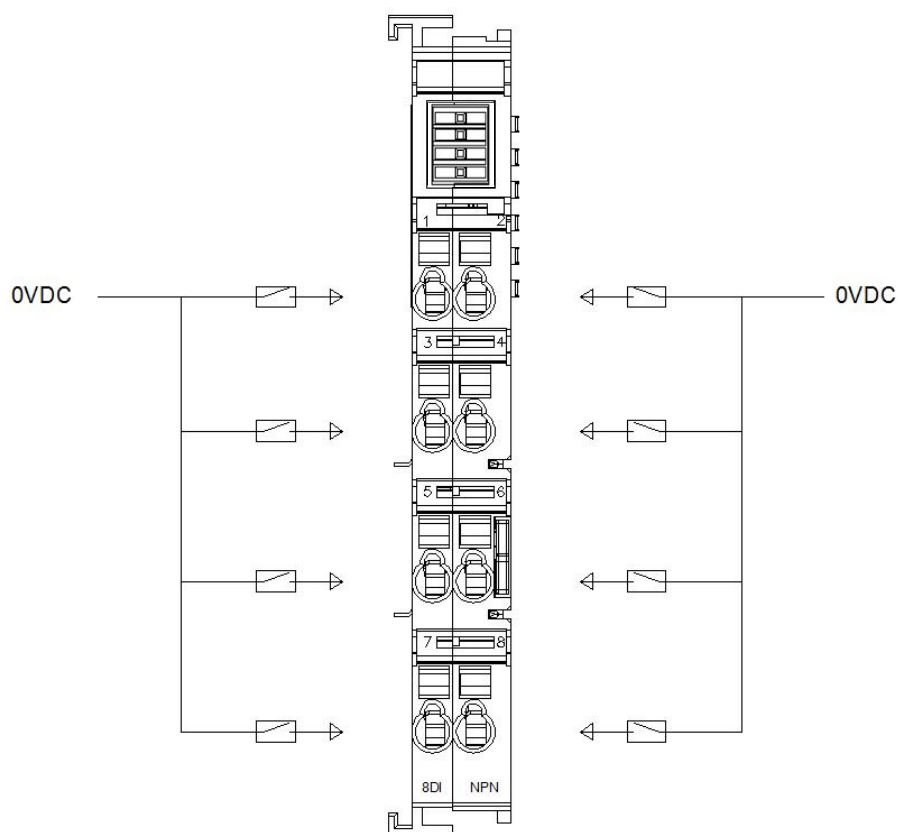
terminal serial number	Signal	Description
1	DI 1	Low level signal input
2	DI 2	
3	DI 3	
4	DI 4	
5	DI 5	
6	DI 6	
7	DI 7	
8	DI 8	

LED indicator definition



1~8 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring Diagram



3. Process data definitions

- The 8-channel NPN digital input module occupies 1 holding register and 8 discrete input status registers.
- Holding Register Block Data Structure Definition.

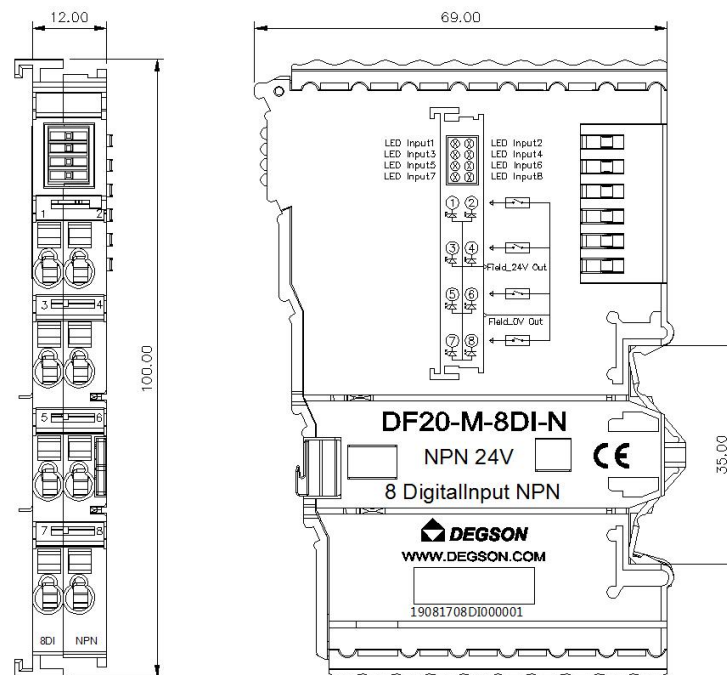
HoldReg	Byte	Format	Bit	Description	DF20-M-8DI-P_HoldRegBlock Size:1
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	\	
			IX1.1	\	
			IX1.2	\	
			IX1.3	\	
			IX1.4	\	
			IX1.5	\	
			IX1.6	\	
			IX1.7	\	

- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-8DI-P_DiscRegBlock Size:8
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	

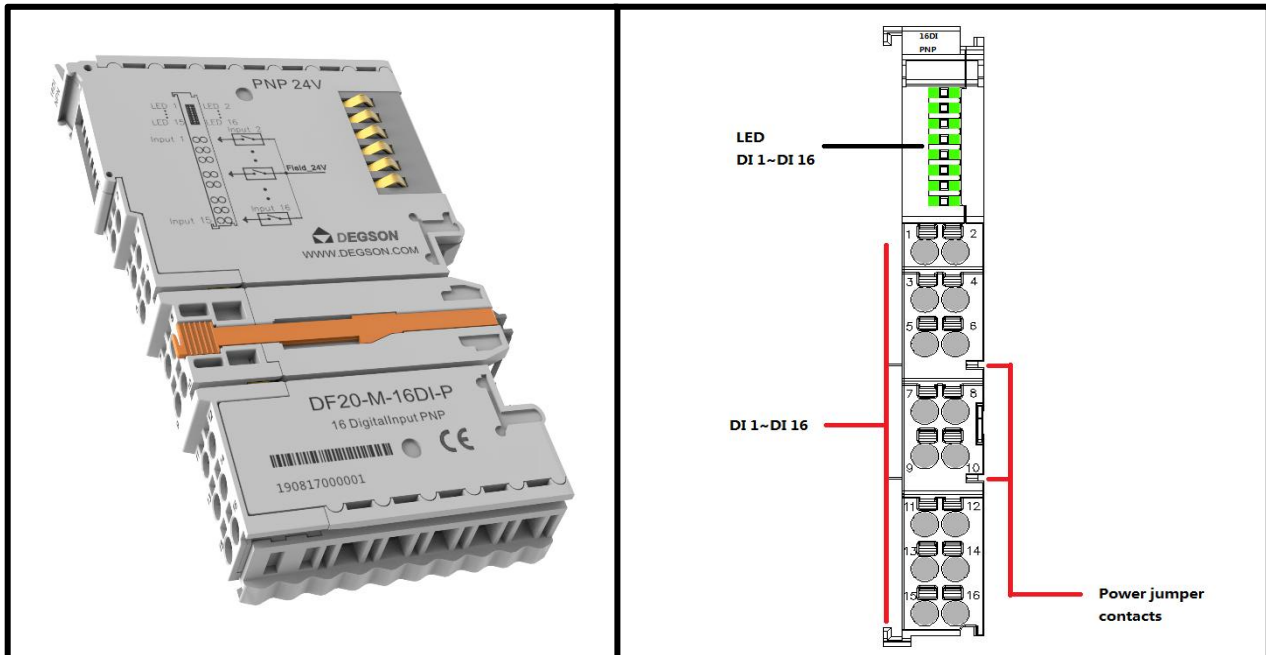
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channel digital input/24VDC/PNP (DF20-M-16DI-P)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 16-channel digital input, PNP high level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

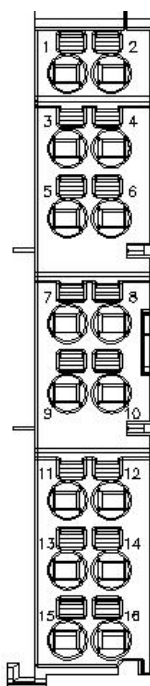


1. Specification parameters

technical information	
Number of digital inputs	16
Total number of channels (modules)	16
signal type	Voltage
voltage signal type	24VDC PNP
connection type	1-wire
Input Characteristics	High level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Input Current (Typical)	3mA
signal (0) voltage range	0~4V
Signal (1) voltage range	18~32V
data size	2 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<15mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	16 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

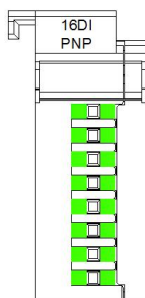
2. hardware interface

Wiring Terminal Definition



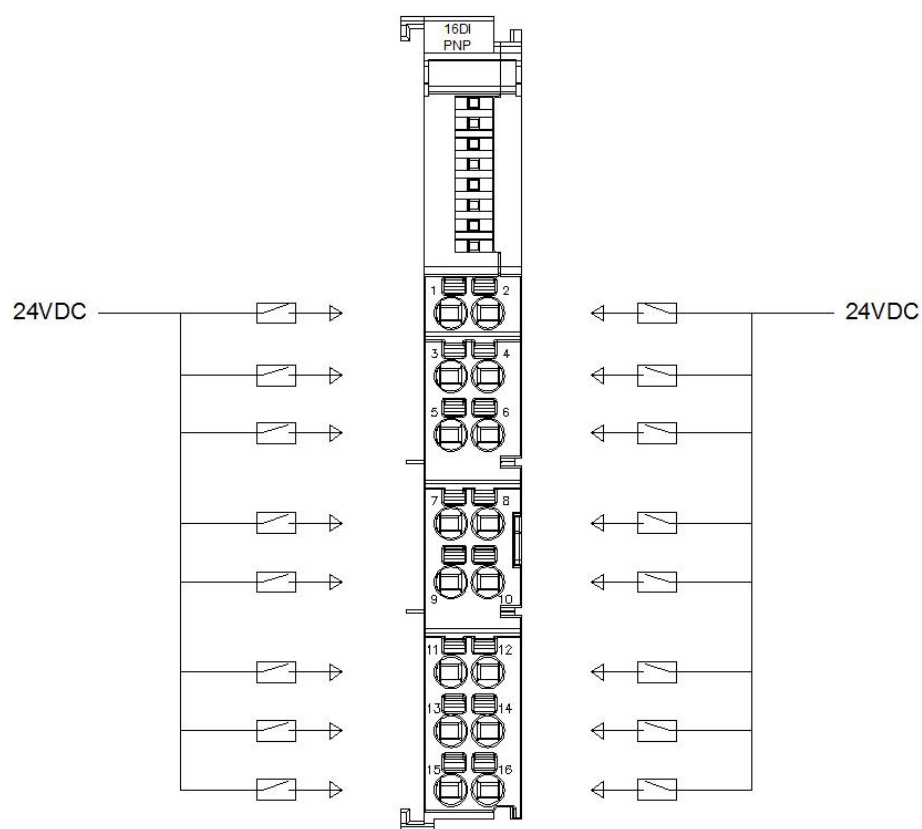
terminal serial number		Signal		Description
1	2	DI 1	DI 2	High level signal input
3	4	DI 3	DI 4	
5	6	DI 5	DI 6	
7	8	DI 7	DI 8	
9	10	DI 9	DI 10	
11	12	DI 11	DI 12	
13	14	DI 13	DI 14	
15	16	DI 15	DI 16	

LED indicator definition



1~16 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring Diagram



3. Process data definitions

- The 16-channel PNP digital input module occupies 1 holding register and 16 discrete input status registers.
- Holding Register Block Data Structure Definition.

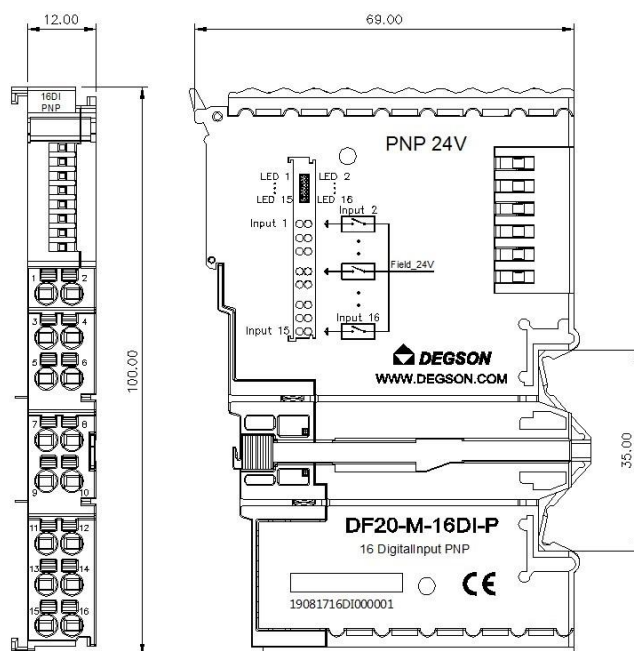
HoldReg	Byte	Format	Bit	Description	DF20-M-16DI-P_HoldRegBlock Size:1
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	DI8	
			IX1.1	DI9	
			IX1.2	DI10	
			IX1.3	DI11	
			IX1.4	DI12	
			IX1.5	DI13	
			IX1.6	DI14	
			IX1.7	DI15	

- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-16DI-P_DiscRegBlock Size:16
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	
8	IB1	Bit	IX1.0	DI8	
9		Bit	IX1.1	DI9	
10		Bit	IX1.2	DI10	
11		Bit	IX1.3	DI11	
12		Bit	IX1.4	DI12	
13		Bit	IX1.5	DI13	
14		Bit	IX1.6	DI14	
15		Bit	IX1.7	DI15	

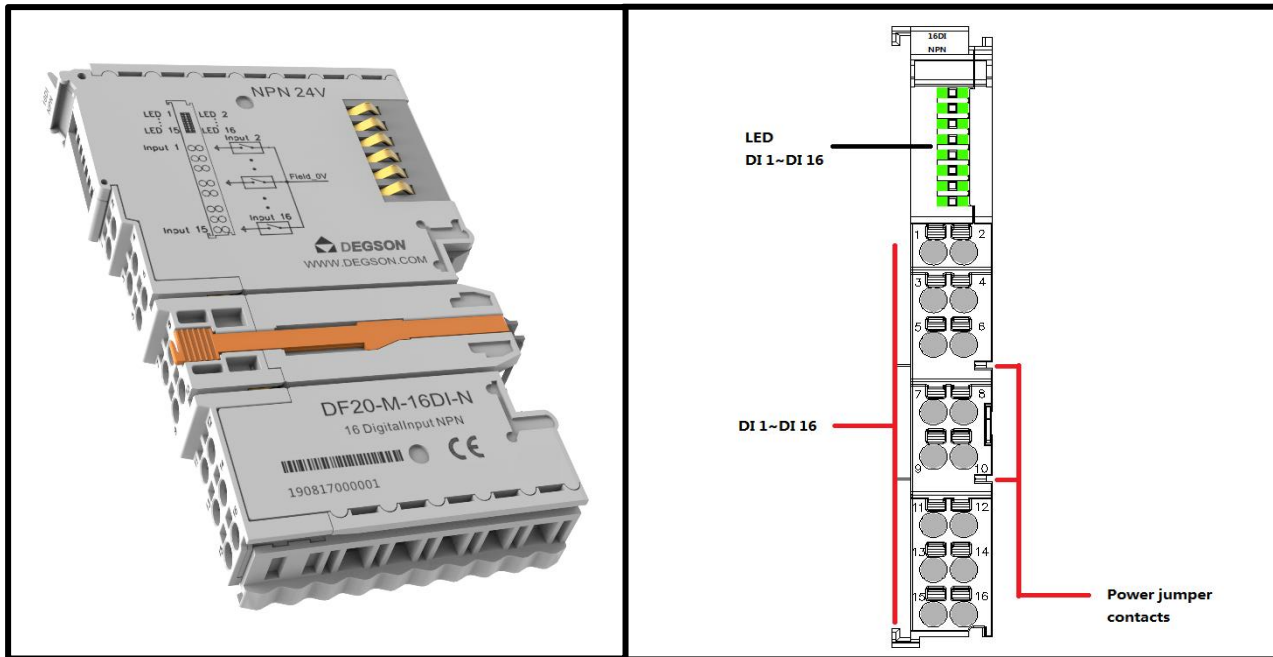
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channel digital input/24VDC/NPN (DF20-M-16DI-N)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 16-channel digital input, NPN low level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

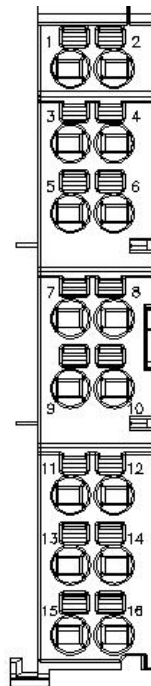


1. Specification parameters

technical information	
Number of digital inputs	16
Total number of channels (modules)	16
signal type	Voltage
voltage signal type	24VDC NPN
connection type	1-wire
Input Characteristics	Low level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Input Current (Typical)	3mA
signal (0) voltage range	18~32V
Signal (1) voltage range	0~4V
data size	2 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<15mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	16 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

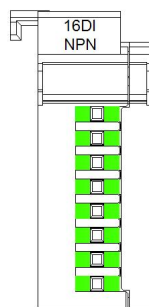
2. hardware interface

Wiring Terminal Definition



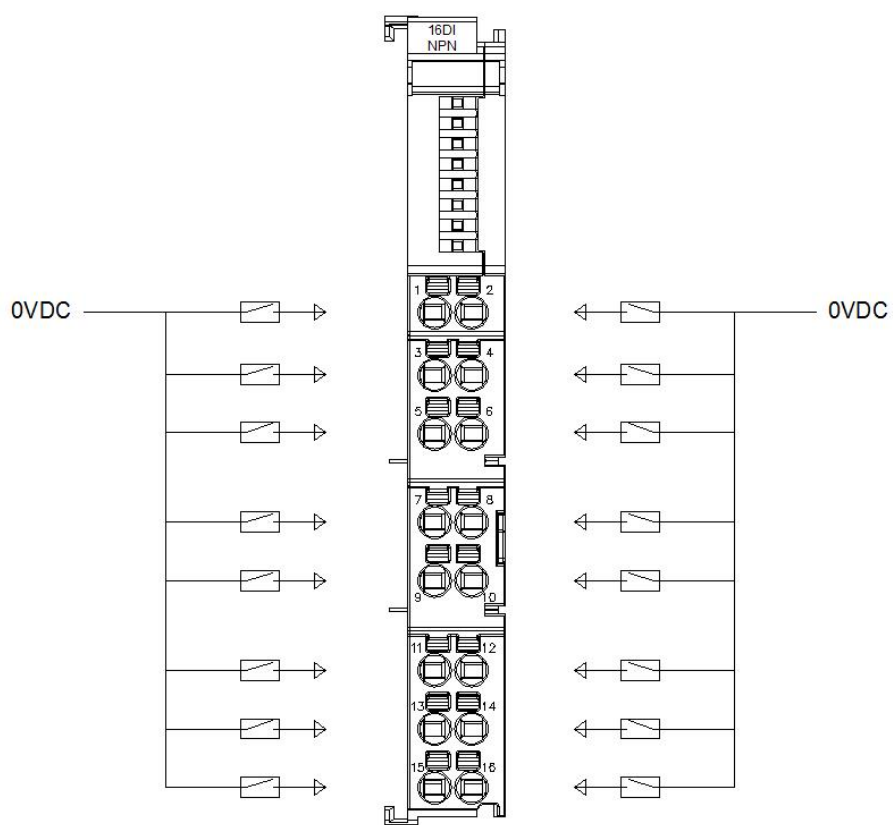
terminal serial number		Signal		Description
1	2	DI 1	DI 2	Low level signal input
3	4	DI 3	DI 4	
5	6	DI 5	DI 6	
7	8	DI 7	DI 8	
9	10	DI 9	DI 10	
11	12	DI 11	DI 12	
13	14	DI 13	DI 14	
15	16	DI 15	DI 16	

LED indicator definition



1~16 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring Diagram



3. Process data definitions

- The 16-channel NPN digital input module occupies 1 holding register and 16 discrete input status registers.
- Holding Register Block Data Structure Definition.

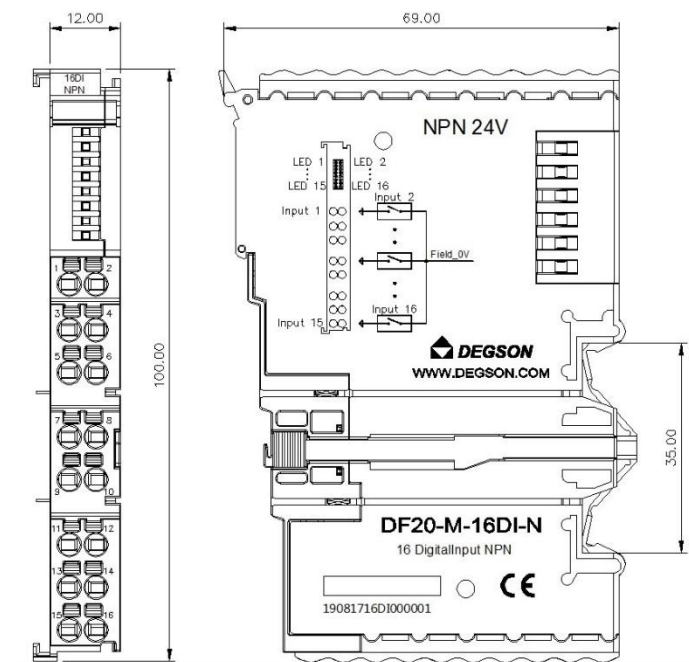
HoldReg	Byte	Format	Bit	Description	DF20-M-16DI-N_HoldRegBlock Size:1
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	DI8	
			IX1.1	DI9	
			IX1.2	DI10	
			IX1.3	DI11	
			IX1.4	DI12	
			IX1.5	DI13	
			IX1.6	DI14	
			IX1.7	DI15	

- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-16DI-N_DiscRegBlock Size:16
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	
8	IB1	Bit	IX1.0	DI8	
9		Bit	IX1.1	DI9	
10		Bit	IX1.2	DI10	
11		Bit	IX1.3	DI11	
12		Bit	IX1.4	DI12	
13		Bit	IX1.5	DI13	
14		Bit	IX1.6	DI14	
15		Bit	IX1.7	DI15	

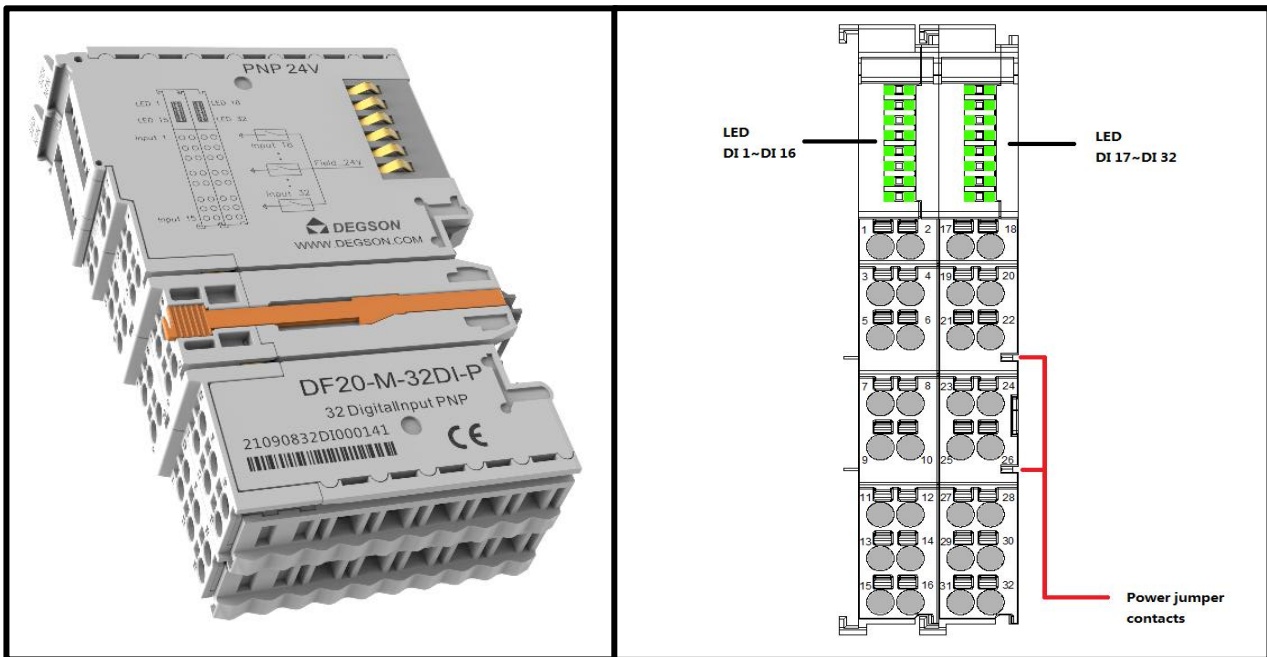
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



32 channel digital input/24VDC/PNP (DF20-M-32DI-P)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 32-channel digital input, PNP high level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

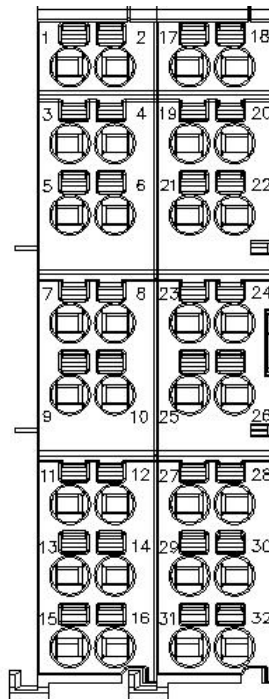


1. Specification parameters

technical information	
Number of digital inputs	32
Total number of channels (modules)	32
signal type	Voltage
voltage signal type	24VDC PNP
connection type	1-wire
Input Characteristics	High level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Input Current (Typical)	3mA
signal (0) voltage range	0~4V
Signal (1) voltage range	18~32V
data size	4 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	32 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	32 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

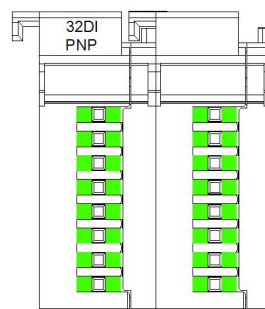
2. Hardware interface

Wiring Terminal Definition



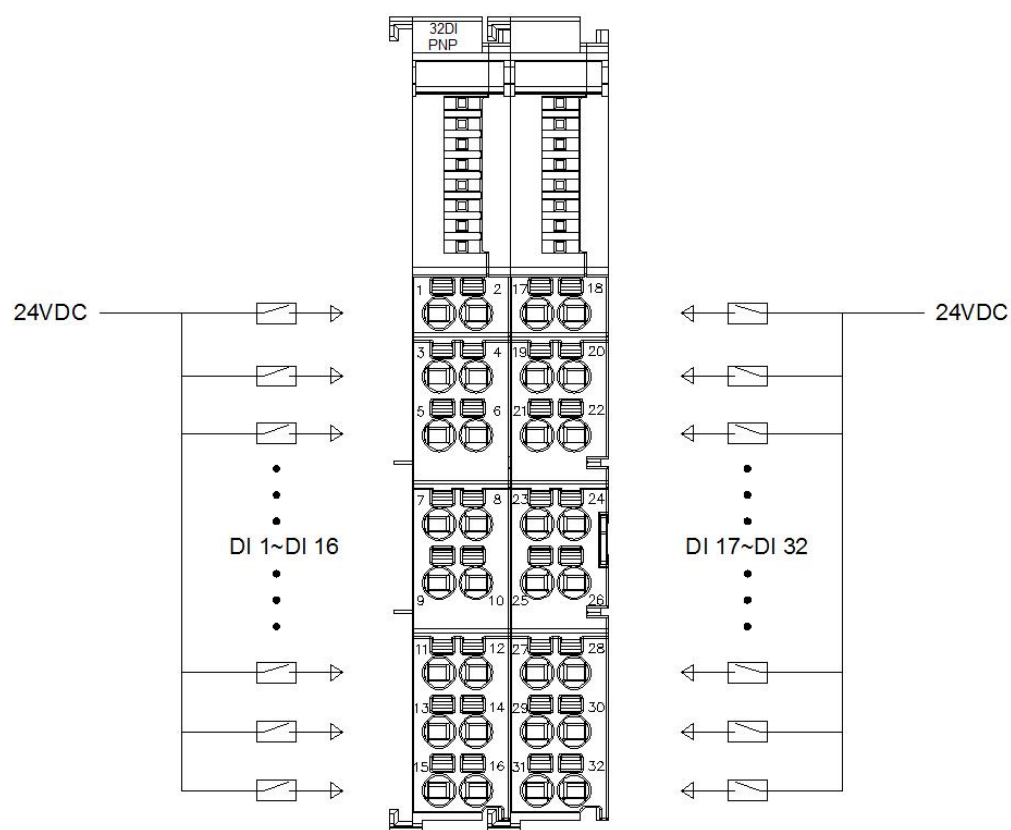
terminal serial number				Signal				Description
1	2	17	18	DI 1	DI 2	DI 17	DI 18	High level signal input
3	4	19	20	DI 3	DI 4	DI 19	DI 20	
5	6	21	22	DI 5	DI 6	DI 21	DI 22	
7	8	23	24	DI 7	DI 8	DI 23	DI 24	
9	10	25	26	DI 9	DI 10	DI 25	DI 26	
11	12	27	28	DI 11	DI 12	DI 27	DI 28	
13	14	29	30	DI 13	DI 14	DI 29	DI 30	
15	16	31	32	DI 15	DI 16	DI 31	DI 32	

LED indicator definition



1~32 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring Diagram



3. Process data definitions

- The 32-channel PNP digital input module occupies 2 holding registers and 32 discrete input status registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description	DF20-M-32DI-P_HoldRegBlock Size:2
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	DI8	
			IX1.1	DI9	
			IX1.2	DI10	
			IX1.3	DI11	
			IX1.4	DI12	
			IX1.5	DI13	
			IX1.6	DI14	
			IX1.7	DI15	
1	IB0	IX0.0	DI16		
		IX0.1	DI17		
		IX0.2	DI18		
		IX0.3	DI19		
		IX0.4	DI20		
		IX0.5	DI21		
		IX0.6	DI22		
		IX0.7	DI23		
	IB1	IX1.0	DI24		
		IX1.1	DI25		
		IX1.2	DI26		
		IX1.3	DI27		
		IX1.4	DI28		
		IX1.5	DI29		
		IX1.6	DI30		
		IX1.7	DI31		

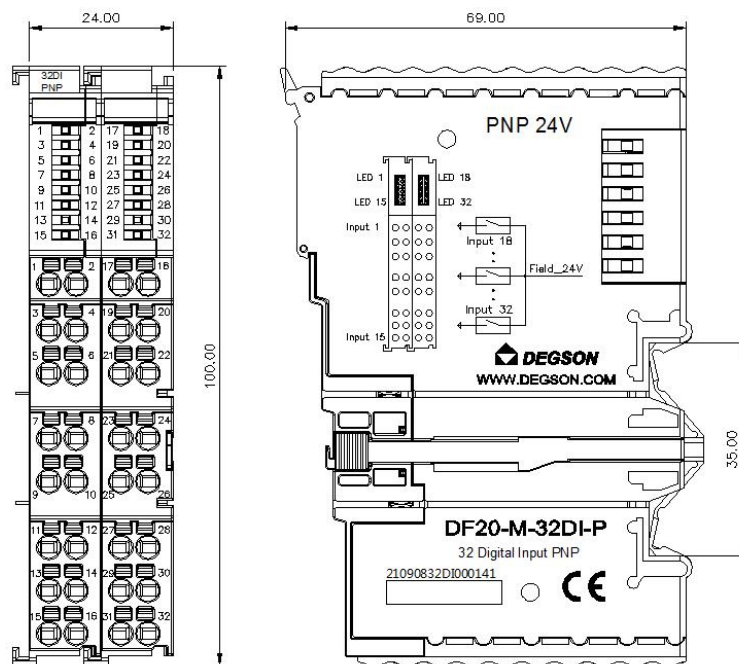
- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-32DI-P_DiscRegBlock Size:32
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	
8	IB1	Bit	IX1.0	DI8	

9		Bit	IX1.1	DI9
10		Bit	IX1.2	DI10
11		Bit	IX1.3	DI11
12		Bit	IX1.4	DI12
13		Bit	IX1.5	DI13
14		Bit	IX1.6	DI14
15		Bit	IX1.7	DI15
16	IB2	Bit	IX2.0	DI16
17		Bit	IX2.1	DI17
18		Bit	IX2.2	DI18
19		Bit	IX2.3	DI19
20		Bit	IX2.4	DI20
21		Bit	IX2.5	DI21
22		Bit	IX2.6	DI22
23	IB3	Bit	IX2.7	DI23
24		Bit	IX3.0	DI24
25		Bit	IX3.1	DI25
26		Bit	IX3.2	DI26
27		Bit	IX3.3	DI27
28		Bit	IX3.4	DI28
29		Bit	IX3.5	DI29
30		Bit	IX3.6	DI30
31		Bit	IX3.7	DI31

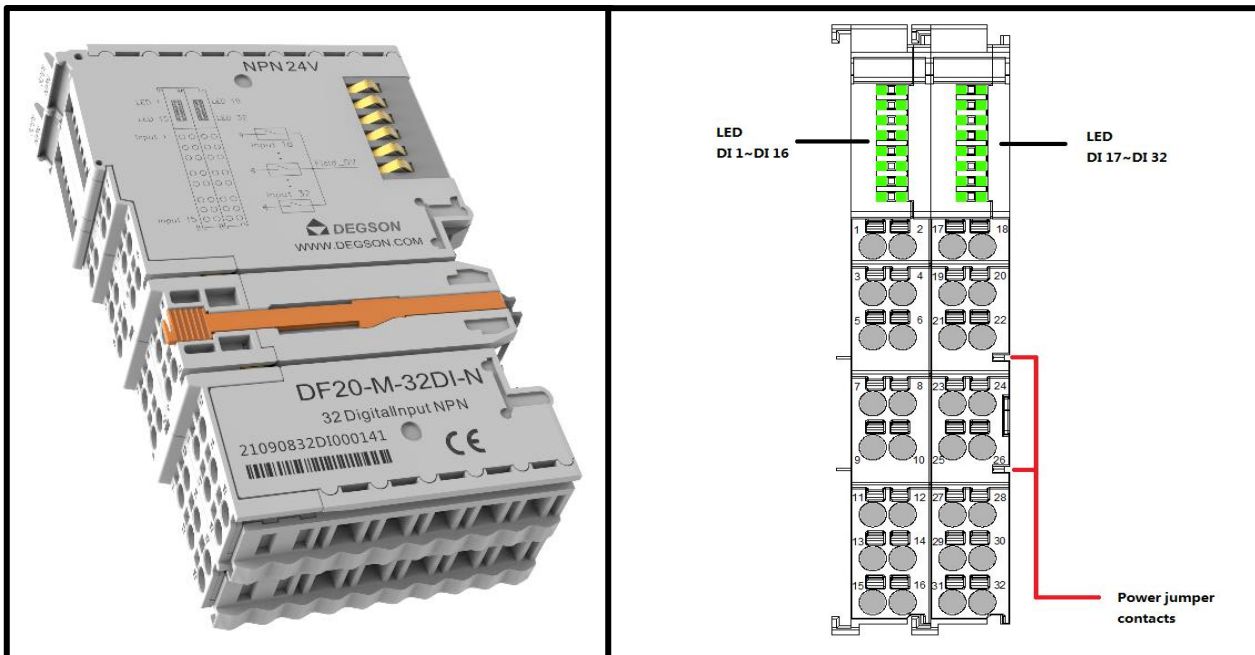
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



32 channel digital input/24VDC/NPN (DF20-M-32DI-N)

- This digital input module receives control signals from field devices (e.g. sensors, etc.).
- 32-channel digital input, NPN low level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

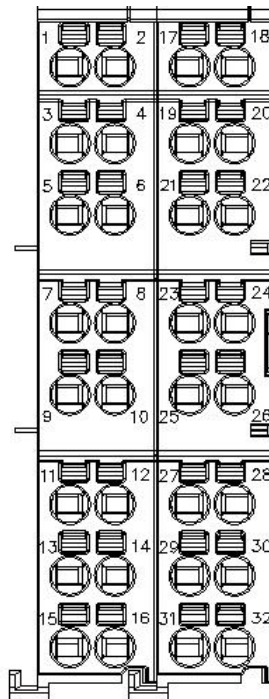


1. Specification parameters

technical information	
Number of digital inputs	32
Total number of channels (modules)	32
signal type	Voltage
voltage signal type	24VDC NPN
connection type	1-wire
Input Characteristics	Low level trigger
Input filtering (digital)	0.3ms
Precision	0.20%
Signal(1) Input current per channel (typical)	3mA
signal (0) voltage range	18~32V
Signal (1) voltage range	0~4V
data size	4 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	32 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	32 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

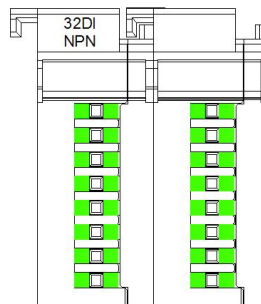
2. hardware interface

Wiring Terminal Definition



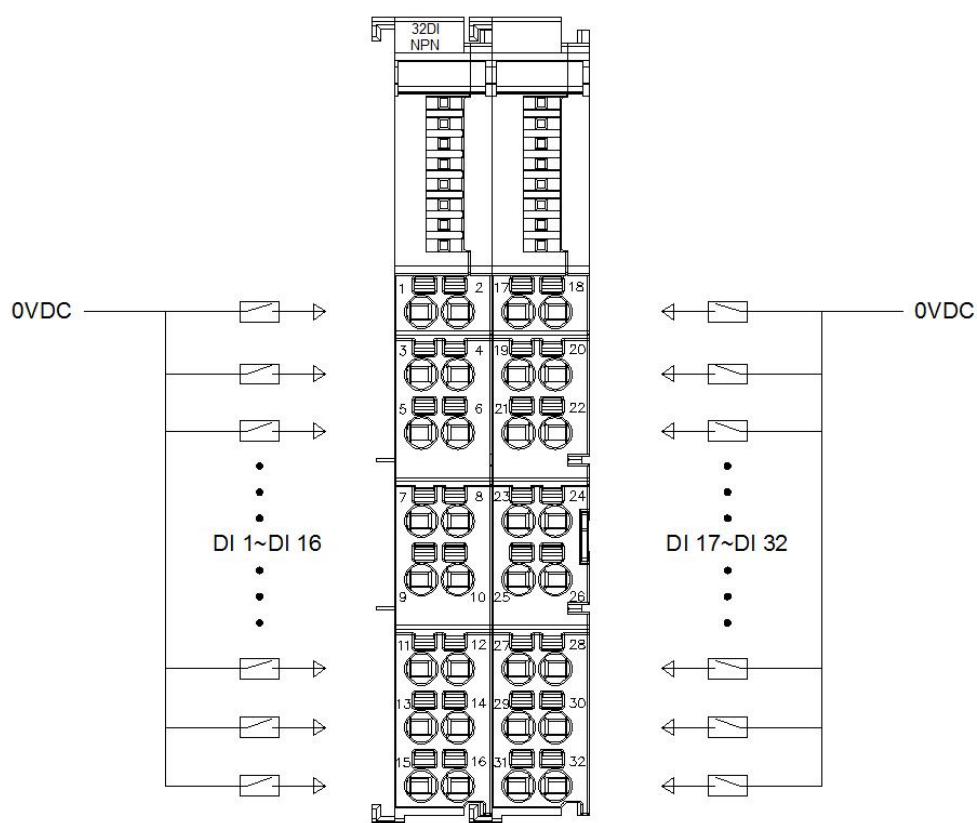
terminal serial number				Signal				Description
1	2	17	18	DI 1	DI 2	DI 17	DI 18	Low level signal input
3	4	19	20	DI 3	DI 4	DI 19	DI 20	
5	6	21	22	DI 5	DI 6	DI 21	DI 22	
7	8	23	24	DI 7	DI 8	DI 23	DI 24	
9	10	25	26	DI 9	DI 10	DI 25	DI 26	
11	12	27	28	DI 11	DI 12	DI 27	DI 28	
13	14	29	30	DI 13	DI 14	DI 29	DI 30	
15	16	31	32	DI 15	DI 16	DI 31	DI 32	

LED indicator definition



1~32 channel indicator	Meaning
light	input signal is valid
put out	Input signal is invalid

Wiring Diagram



3. process data definitions

- The 32-channel NPN digital input module occupies 2 holding registers and 32 discrete input status registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description	DF20-M-32DI-N_HoldRegBlock Size:2
0	IB0	1Word	IX0.0	DI0	
			IX0.1	DI1	
			IX0.2	DI2	
			IX0.3	DI3	
			IX0.4	DI4	
			IX0.5	DI5	
			IX0.6	DI6	
			IX0.7	DI7	
	IB1		IX1.0	DI8	
			IX1.1	DI9	
			IX1.2	DI10	
			IX1.3	DI11	
			IX1.4	DI12	
			IX1.5	DI13	
			IX1.6	DI14	
			IX1.7	DI15	
1	IB0	IX0.0	DI16		
		IX0.1	DI17		
		IX0.2	DI18		
		IX0.3	DI19		
		IX0.4	DI20		
		IX0.5	DI21		
		IX0.6	DI22		
		IX0.7	DI23		
	IB1	IX1.0	DI24		
		IX1.1	DI25		
		IX1.2	DI26		
		IX1.3	DI27		
		IX1.4	DI28		
		IX1.5	DI29		
		IX1.6	DI30		
		IX1.7	DI31		

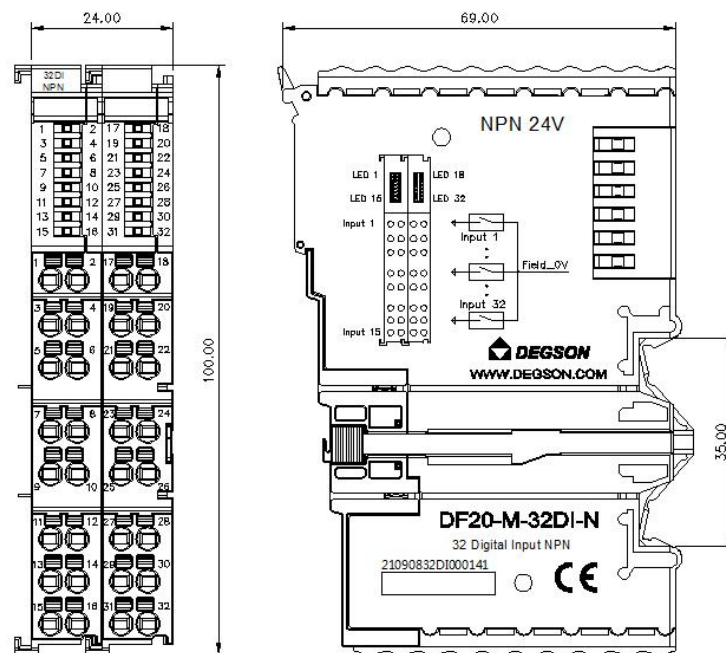
- Discrete Input Status Register Block Data Structure Definition.

DiscReg	Byte	Format	Bit	Description	DF20-M-32DI-N_DiscRegBlock Size:32
0	IB0	Bit	IX0.0	DI0	
1		Bit	IX0.1	DI1	
2		Bit	IX0.2	DI2	
3		Bit	IX0.3	DI3	
4		Bit	IX0.4	DI4	
5		Bit	IX0.5	DI5	
6		Bit	IX0.6	DI6	
7		Bit	IX0.7	DI7	
8	IB1	Bit	IX1.0	DI8	

9		Bit	IX1.1	DI9
10		Bit	IX1.2	DI10
11		Bit	IX1.3	DI11
12		Bit	IX1.4	DI12
13		Bit	IX1.5	DI13
14		Bit	IX1.6	DI14
15		Bit	IX1.7	DI15
16	IB2	Bit	IX2.0	DI16
17		Bit	IX2.1	DI17
18		Bit	IX2.2	DI18
19		Bit	IX2.3	DI19
20		Bit	IX2.4	DI20
21		Bit	IX2.5	DI21
22		Bit	IX2.6	DI22
23	IB3	Bit	IX2.7	DI23
24		Bit	IX3.0	DI24
25		Bit	IX3.1	DI25
26		Bit	IX3.2	DI26
27		Bit	IX3.3	DI27
28		Bit	IX3.4	DI28
29		Bit	IX3.5	DI29
30		Bit	IX3.6	DI30
31		Bit	IX3.7	DI31

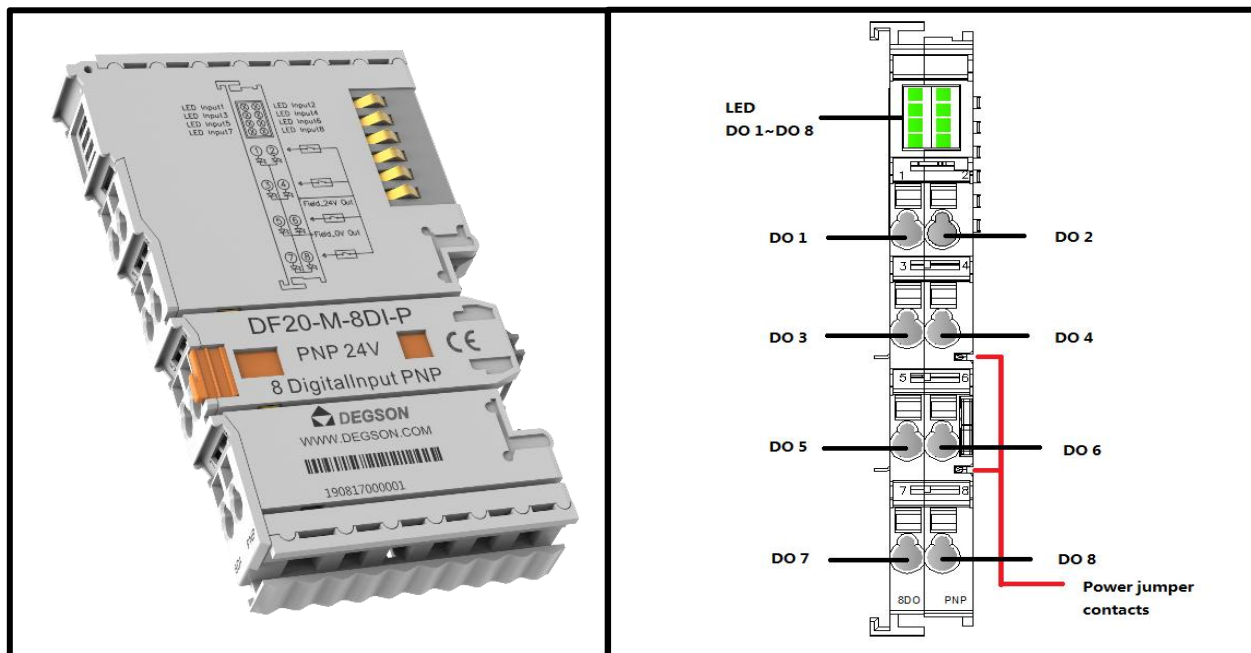
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel digital output/24VDC/PNP (DF20-M-8DO-P)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 8-channel digital output, PNP high level active.
- Each output module is equipped with an anti-interference filter.
- Each output module has an LED indicator.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

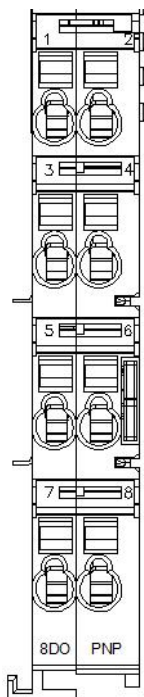


1. Specification parameters

technical information	
Number of digital outputs	8
Total number of channels (modules)	8
signal type	Voltage
voltage signal type	24V DC PNP
connection type	1-wire
output characteristics	High level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	24V DC
data size	1 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<50mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	8 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

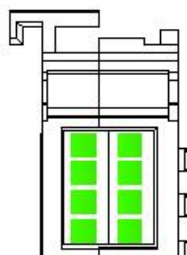
2. hardware interface

Wiring Terminal Definition



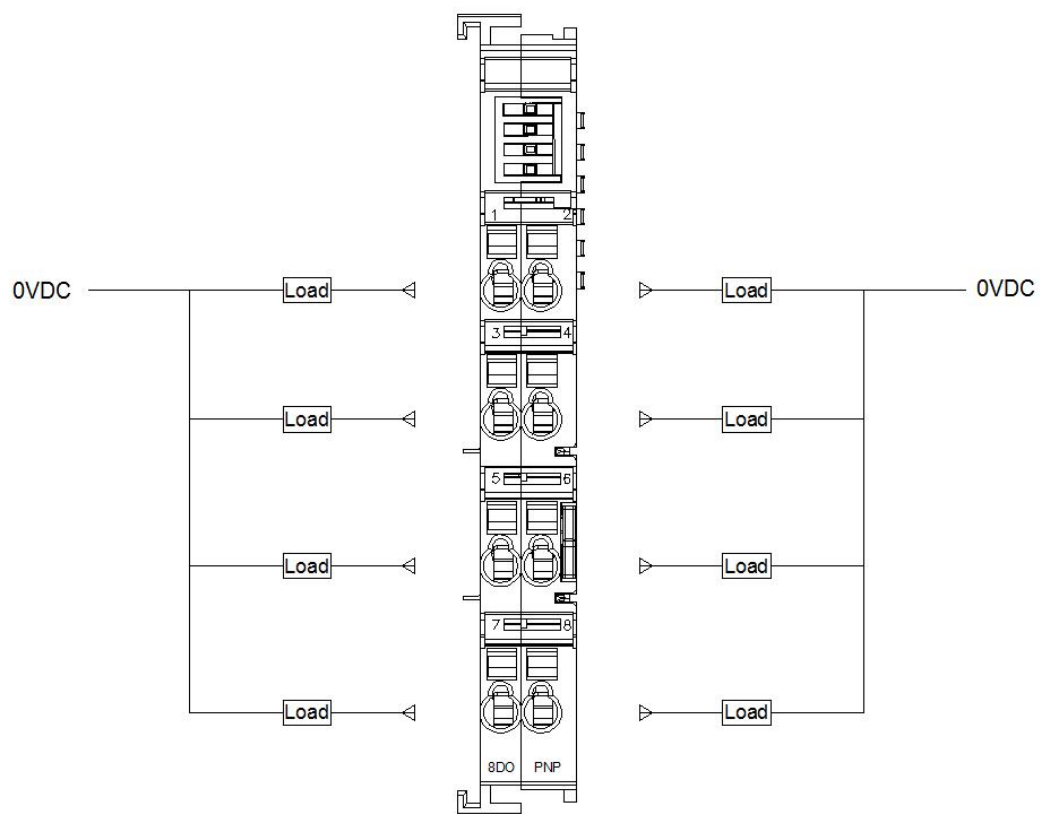
terminal serial number	Signal	Description
1	DO 1	High-level signal output
2	DO 2	
3	DO 3	
4	DO 4	
5	DO 5	
6	DO 6	
7	DO 7	
8	DO 8	

LED indicator definition



1~8 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

Wiring Diagram



3. process data definitions

- 8-channel digital PNP output module occupies 1 holding register and 8 coil status registers.
- Holding Register Block Data Structure Definition.

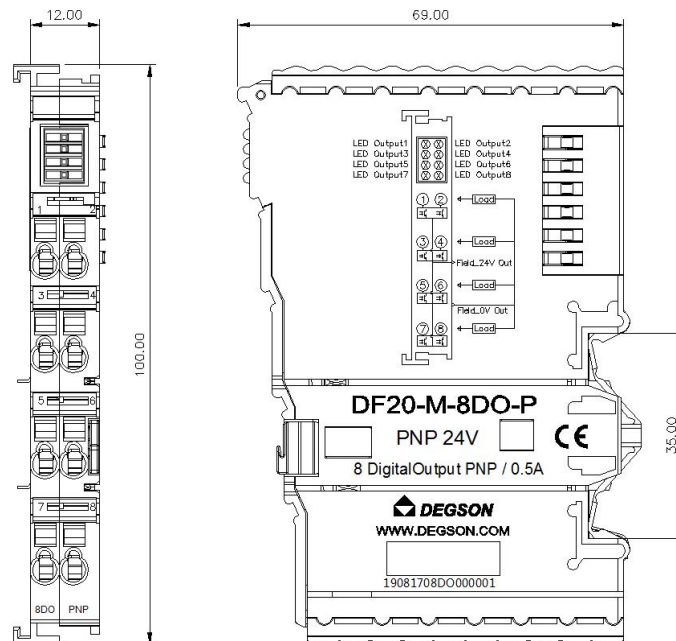
HoldReg	Byte	Format	Bit	Description	DF20-M-8DO-P_HoldRegBlock Size:1
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	\	
			QX1.1	\	
			QX1.2	\	
			QX1.3	\	
			QX1.4	\	
			QX1.5	\	
			QX1.6	\	
QX1.7		\			

- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	
0	QB0	Bit	QX0.0	DO0	DF20-M-8DO-P_CoilRegBlock Size:8
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	
6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	

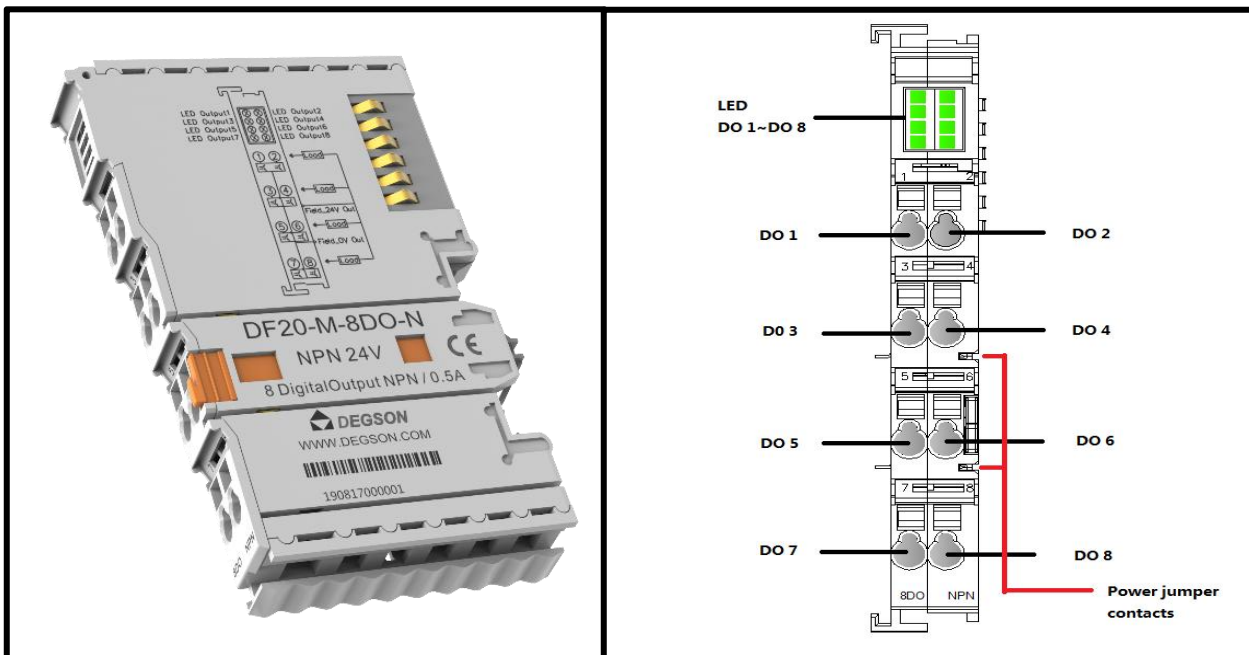
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel digital output/24VDC/NPN (DF20-M-8DO-N)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 8-channel digital output, NPN low level active.
- Each output module is equipped with an anti-interference filter.
- Each output module has an LED indicator.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

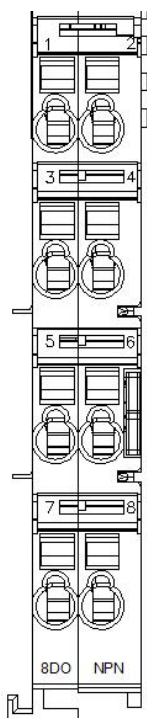


1. Specification parameters

technical information	
Number of digital outputs	8
Total number of channels (modules)	8
signal type	Voltage
voltage signal type	24V DC NPN
connection type	1-wire
output characteristics	Low level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	0V DC
data size	1 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<50mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	8 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

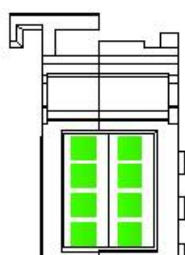
2. hardware interface

Wiring Terminal Definition



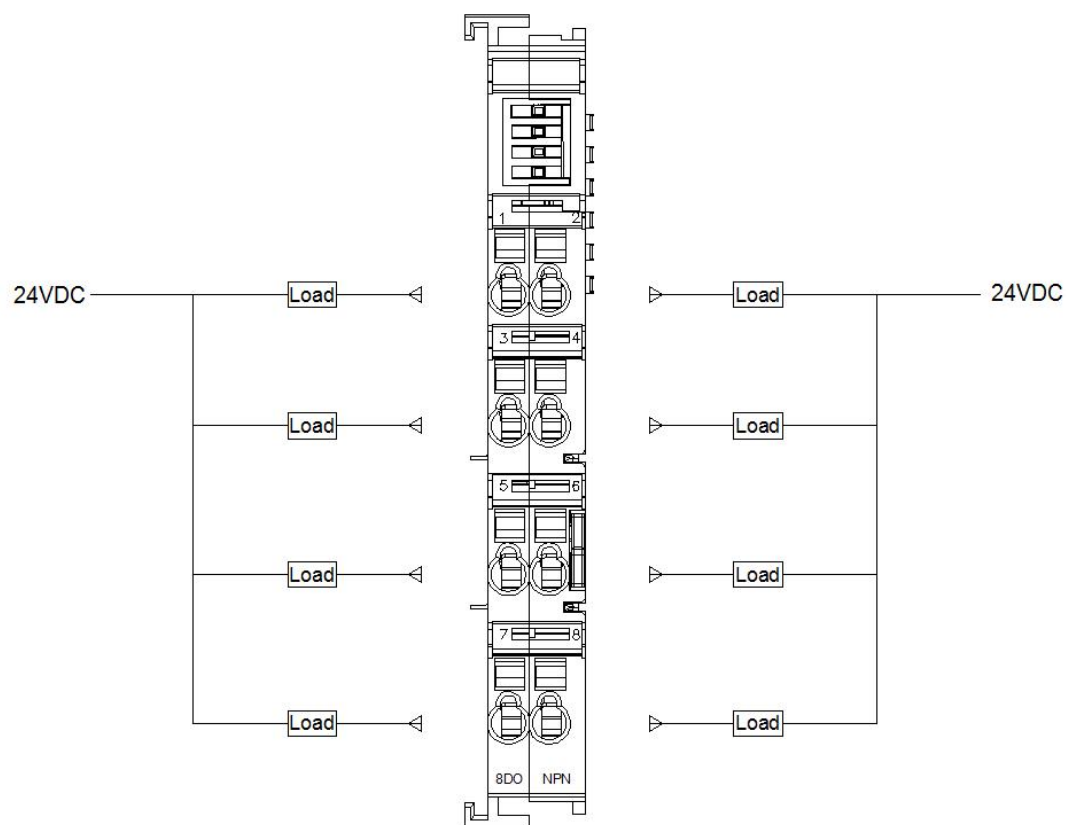
terminal serial number	Signal	Description
1	DO 1	Low level signal output
2	DO 2	
3	DO 3	
4	DO 4	
5	DO 5	
6	DO 6	
7	DO 7	
8	DO 8	

LED indicator definition



1~8 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

Wiring Diagram



3. process data definitions

- 8-channel digital NPN output module occupies 1 holding register and 8 coil status registers.
- Holding Register Block Data Structure Definition.

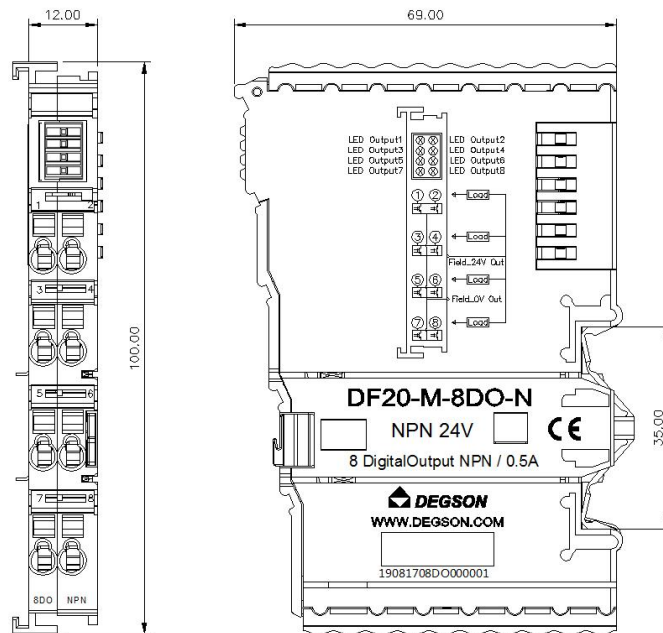
HoldReg	Byte	Format	Bit	Description	DF20-M-8DO-N_HoldRegBlock Size:1
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	\	
			QX1.1	\	
			QX1.2	\	
			QX1.3	\	
			QX1.4	\	
			QX1.5	\	
			QX1.6	\	
			QX1.7	\	

- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	DF20-M-8DO-N_CoilRegBlock Size:8
0	QB0	Bit	QX0.0	DO0	
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	
6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	

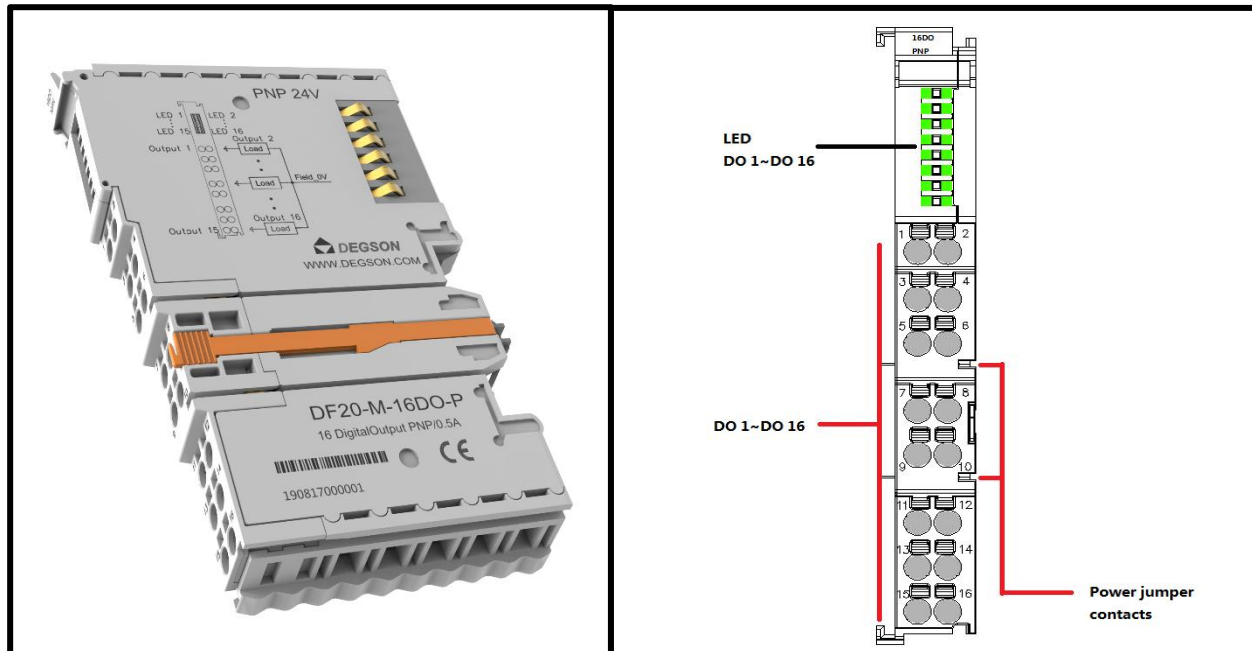
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channel digital output/24VDC/PNP (DF20-M-16DO-P)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 16-channel digital output, PNP high level active.
- Each output module is equipped with an anti-interference filter.
- Each output module has an LED indicator.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

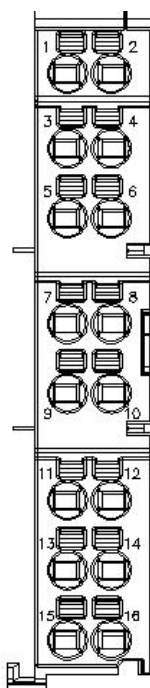


1. Specification parameters

technical information	
Number of digital outputs	16
Total number of channels (modules)	16
signal type	Voltage
voltage signal type	24V DC PNP
connection type	1-wire
output characteristics	High level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	24V DC
data size	2 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<75mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	16 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

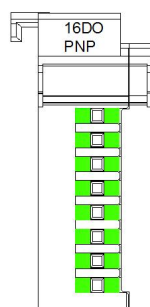
2. hardware interface

● Wiring Terminal Definition



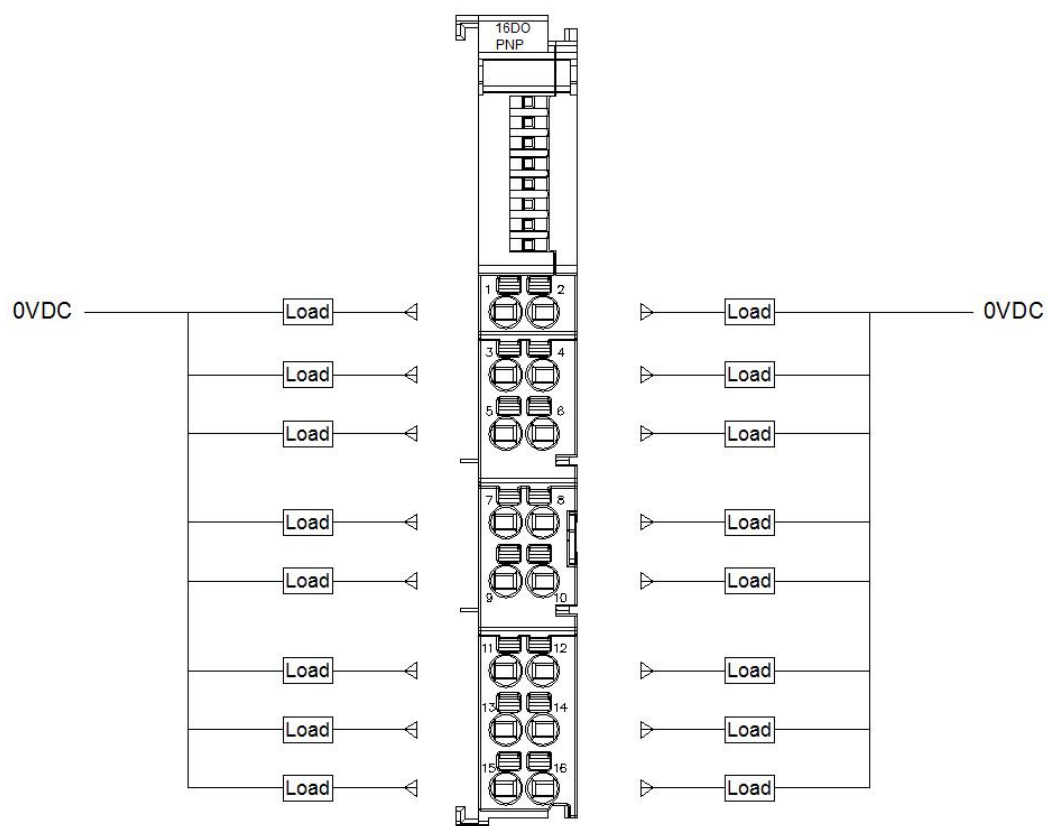
terminal serial number		Signal		Description
1	2	DO 1	DO 2	High-level signal output
3	4	DO 3	DO 4	
5	6	DO 5	DO 6	
7	8	DO 7	DO 8	
9	10	DO 9	DO 10	
11	12	DO 11	DO 12	
13	14	DO 13	DO 14	
15	16	DO 15	DO 16	

● LED indicator definition



1~16 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

● Wiring Diagram



3. process data definitions

- 16-channel digital PNP output module, occupying 1 holding register and 16 coil status registers.
- Holding Register Block Data Structure Definition.

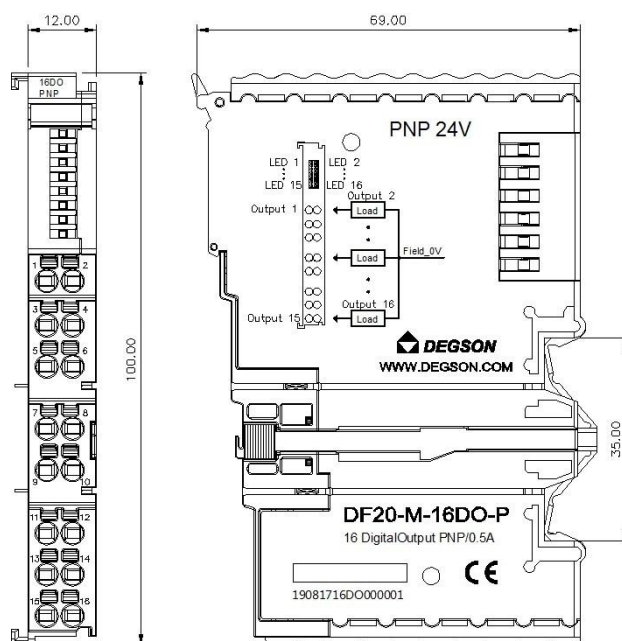
HoldReg	Byte	Format	Bit	Description	DF20-M-16DO-P_HoldRegBlock Size:1
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	DO8	
			QX1.1	DO9	
			QX1.2	DO10	
			QX1.3	DO11	
			QX1.4	DO12	
			QX1.5	DO13	
			QX1.6	DO14	
			QX1.7	DO15	

- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	DF20-M-16DO-P_CoilRegBlock Size:16
0	QB0	Bit	QX0.0	DO0	
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	
6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	
8	QB1	Bit	QX1.0	DO8	
9		Bit	QX1.1	DO9	
10		Bit	QX1.2	DO10	
11		Bit	QX1.3	DO11	
12		Bit	QX1.4	DO12	
13		Bit	QX1.5	DO13	
14		Bit	QX1.6	DO14	
15		Bit	QX1.7	DO15	

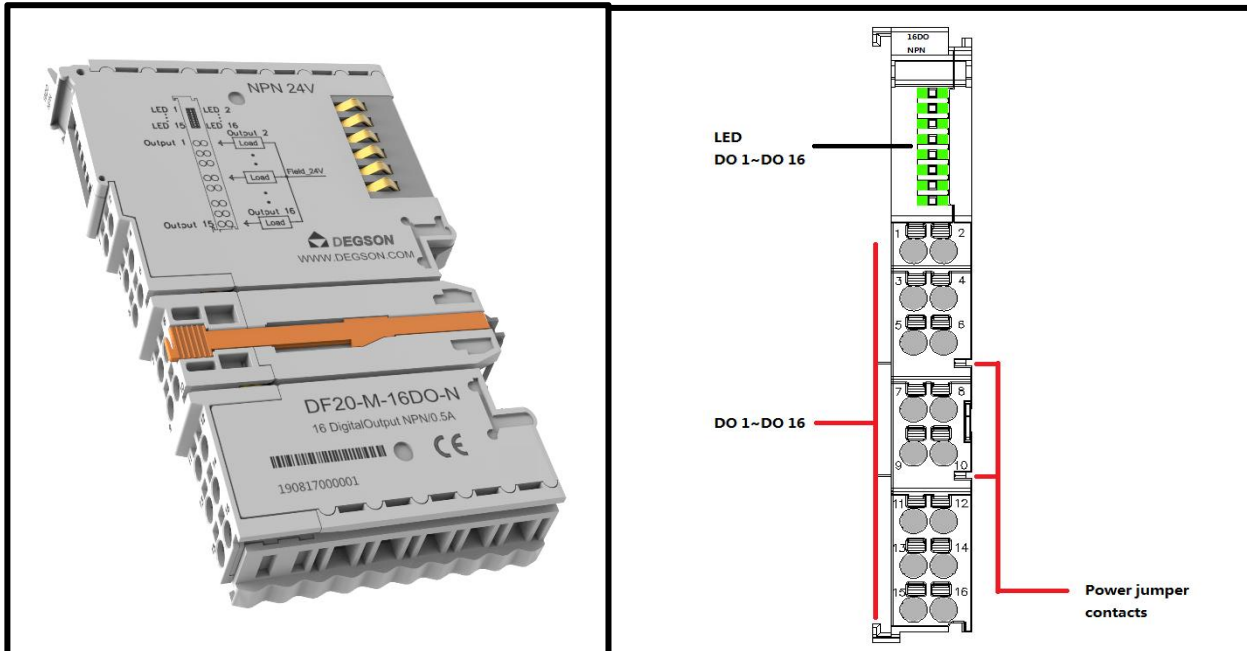
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channel digital output/24VDC/NPN (DF20-M-16DO-N)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 16-channel digital output, NPN low level active.
- Each output module is equipped with an anti-interference filter.
- Each output module has an LED indicator.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

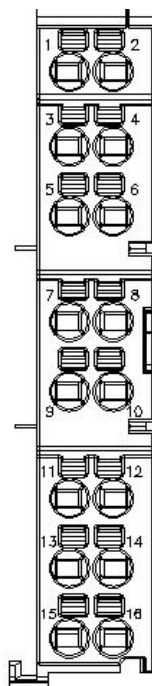


1. Specification parameters

technical information	
Number of digital outputs	16
Total number of channels (modules)	16
signal type	Voltage
voltage signal type	24V DC NPN
connection type	1-wire
output characteristics	Low level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	0V DC
data size	2 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<75mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	16 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

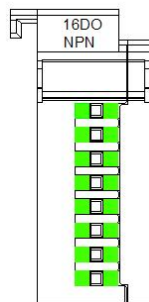
2. hardware interface

Wiring Terminal Definition



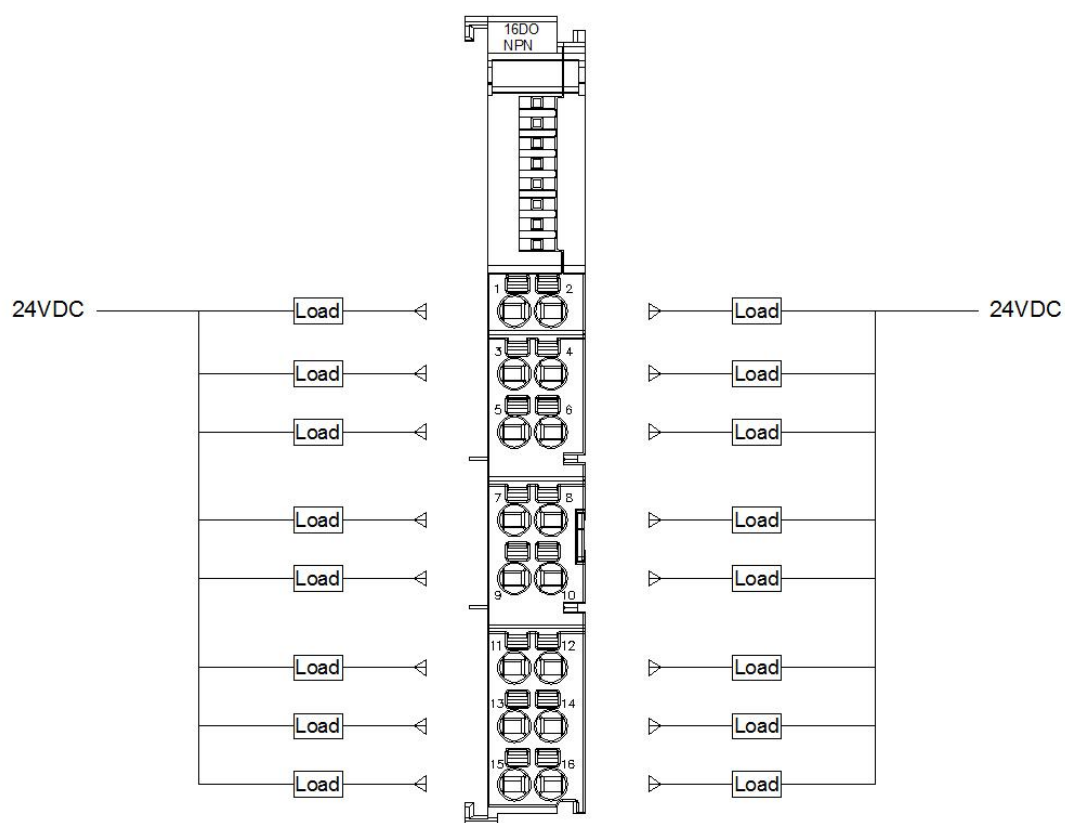
terminal serial number		Signal		Description
1	2	DO 1	DO 2	Low level signal output
3	4	DO 3	DO 4	
5	6	DO 5	DO 6	
7	8	DO 7	DO 8	
9	10	DO 9	DO 10	
11	12	DO 11	DO 12	
13	14	DO 13	DO 14	
15	16	DO 15	DO 16	

LED indicator definition



1~16 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

Wiring Diagram



3. process data definitions

- 16-channel digital NPN output module, occupying 1 holding register and 16 coil status registers.
- Holding Register Block Data Structure Definition.

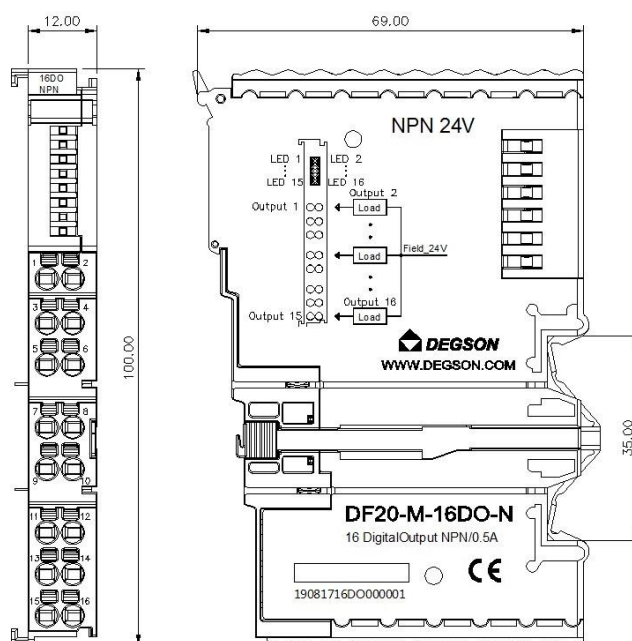
HoldReg	Byte	Format	Bit	Description	DF20-M-16DO-N_HoldRegBlock Size:1
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	DO8	
			QX1.1	DO9	
			QX1.2	DO10	
			QX1.3	DO11	
			QX1.4	DO12	
			QX1.5	DO13	
			QX1.6	DO14	
			QX1.7	DO15	

- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	DF20-M-16DO-N_CoilRegBlock Size:16
0	QB0	Bit	QX0.0	DO0	
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	
6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	
8	QB1	Bit	QX1.0	DO8	
9		Bit	QX1.1	DO9	
10		Bit	QX1.2	DO10	
11		Bit	QX1.3	DO11	
12		Bit	QX1.4	DO12	
13		Bit	QX1.5	DO13	
14		Bit	QX1.6	DO14	
15		Bit	QX1.7	DO15	

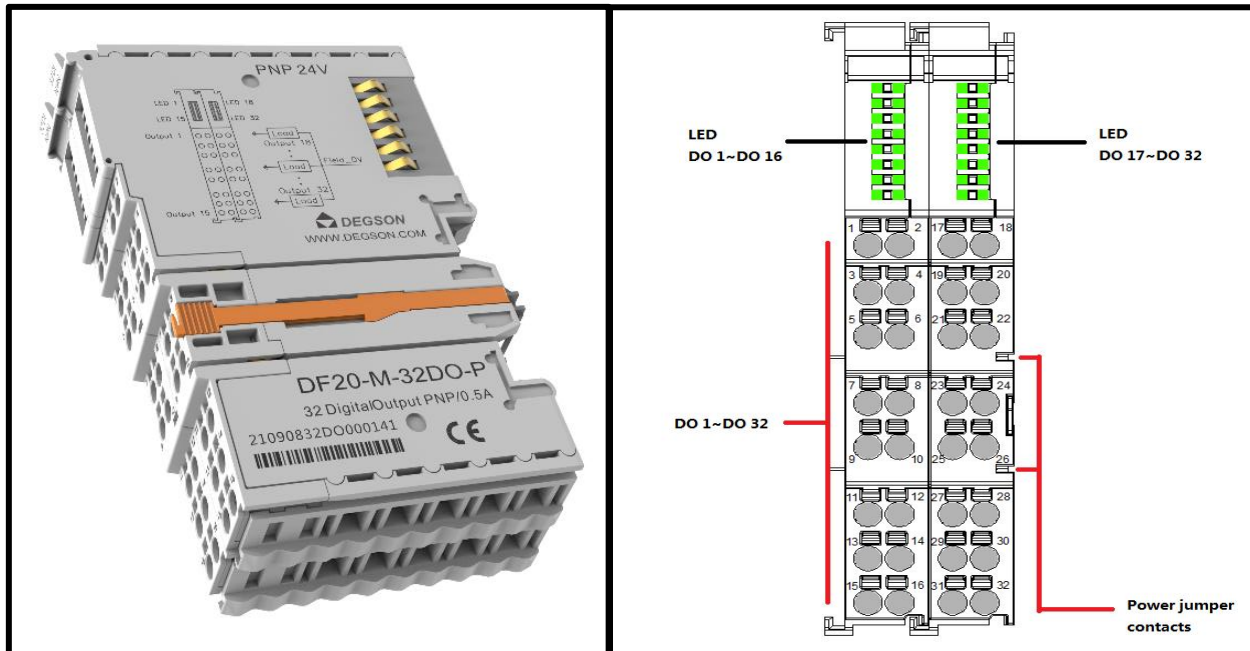
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



32 channel digital output/24VDC/PNP (DF20-M-32DO-P)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 32-channel digital output, PNP high level active.
- Each output module is equipped with an anti-interference filter.
- Each output module has an LED indicator.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

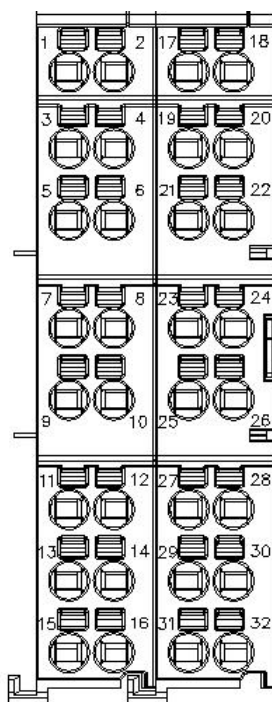


1. Specification parameters

technical information	
Number of digital outputs	32
Total number of channels (modules)	32
signal type	Voltage
voltage signal type	24V DC PNP
connection type	1-wire
output characteristics	Low level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	24V DC
data size	4 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<100mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	32 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	32 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

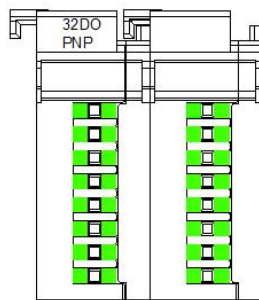
2. hardware interface

Wiring Terminal Definition



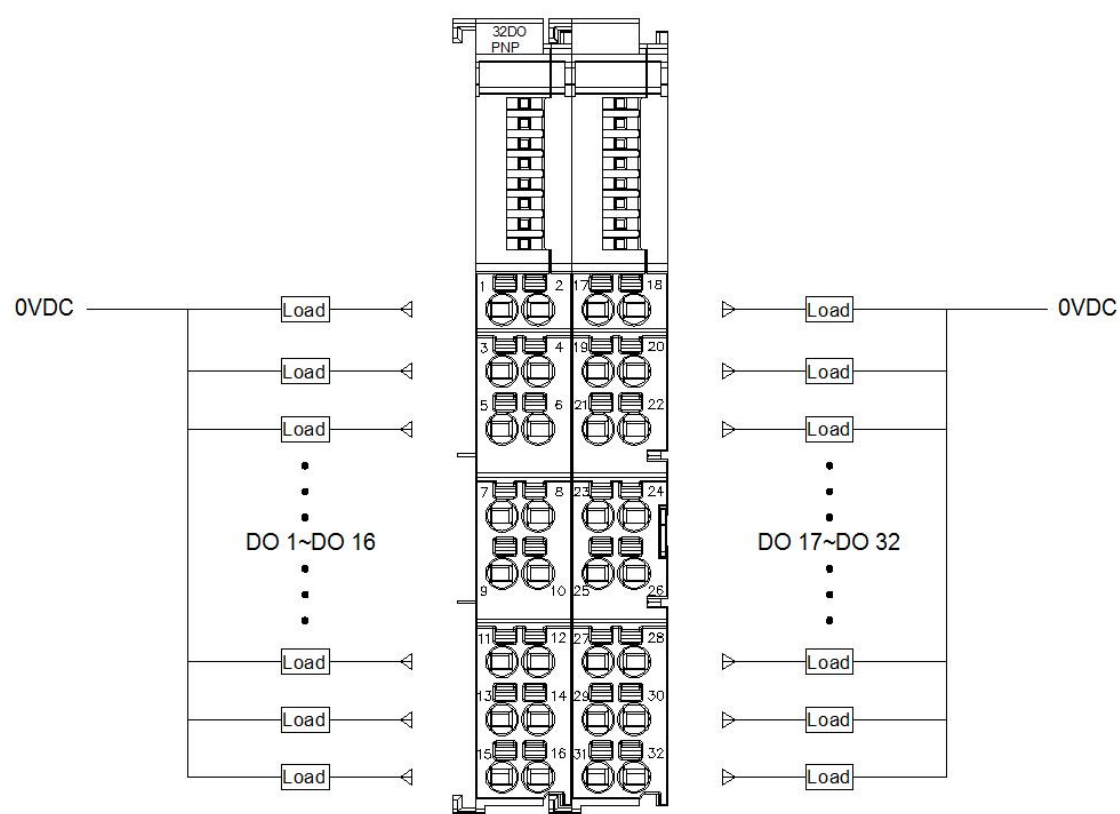
terminal serial number				Signal				Description
1	2	17	18	DO 1	DO 2	DO 17	DO 18	High-level signal output
3	4	19	20	DO 3	DO 4	DO 19	DO 20	
5	6	21	22	DO 5	DO 6	DO 21	DO 22	
7	8	23	24	DO 7	DO 8	DO 23	DO 24	
9	10	25	26	DO 9	DO 10	DO 25	DO 26	
11	12	27	28	DO 11	DO 12	DO 27	DO 28	
13	14	29	30	DO 13	DO 14	DO 29	DO 30	
15	16	31	32	DO 15	DO 16	DO 31	DO 32	

LED indicator definition



1~32 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

Wiring Diagram



3. process data definitions

- 32-channel digital PNP output module, occupying 2 holding registers and 32 coil status registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description	DF20-M-32DO-P_HoldRegBlock Size:2
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	DO8	
			QX1.1	DO9	
			QX1.2	DO10	
			QX1.3	DO11	
			QX1.4	DO12	
			QX1.5	DO13	
			QX1.6	DO14	
			QX1.7	DO15	
1	QB0	1Word	QX0.0	DO16	
			QX0.1	DO17	
			QX0.2	DO18	
			QX0.3	DO19	
			QX0.4	DO20	
			QX0.5	DO21	
			QX0.6	DO22	
			QX0.7	DO23	
	QB1		QX1.0	DO24	
			QX1.1	DO25	
			QX1.2	DO26	
			QX1.3	DO27	
			QX1.4	DO28	
			QX1.5	DO29	
			QX1.6	DO30	
			QX1.7	DO31	

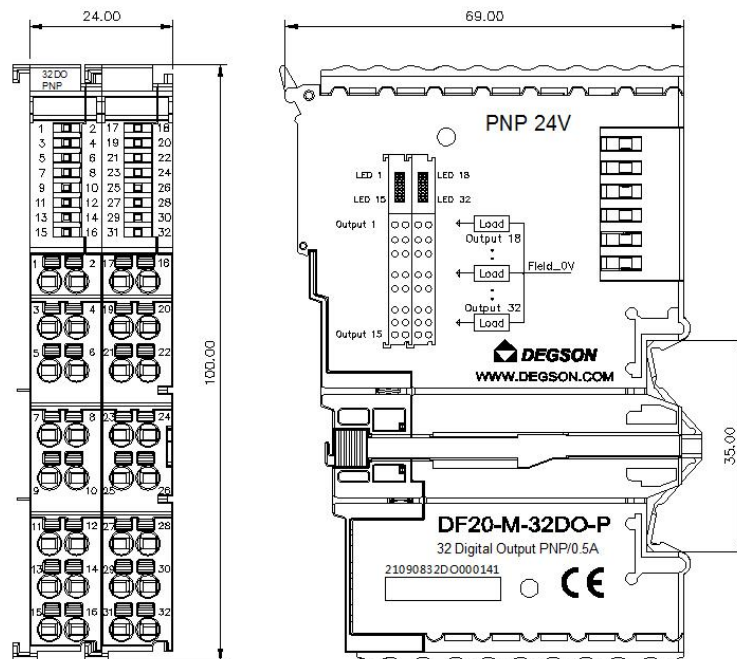
- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	DF20-M-32DO-P_CoilRegBlock Size:32
0	QB0	Bit	QX0.0	DO0	
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	

6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	
8	QB1	Bit	QX1.0	DO8	
9		Bit	QX1.1	DO9	
10		Bit	QX1.2	DO10	
11		Bit	QX1.3	DO11	
12		Bit	QX1.4	DO12	
13		Bit	QX1.5	DO13	
14		Bit	QX1.6	DO14	
15		Bit	QX1.7	DO15	
16	QB2	Bit	QX2.0	DO16	
17		Bit	QX2.1	DO17	
18		Bit	QX2.2	DO18	
19		Bit	QX2.3	DO19	
20		Bit	QX2.4	DO20	
21		Bit	QX2.5	DO21	
22		Bit	QX2.6	DO22	
23		Bit	QX2.7	DO23	
24	QB3	Bit	QX3.0	DO24	
25		Bit	QX3.1	DO25	
26		Bit	QX3.2	DO26	
27		Bit	QX3.3	DO27	
28		Bit	QX3.4	DO28	
29		Bit	QX3.5	DO29	
30		Bit	QX3.6	DO30	
31		Bit	QX3.7	DO31	

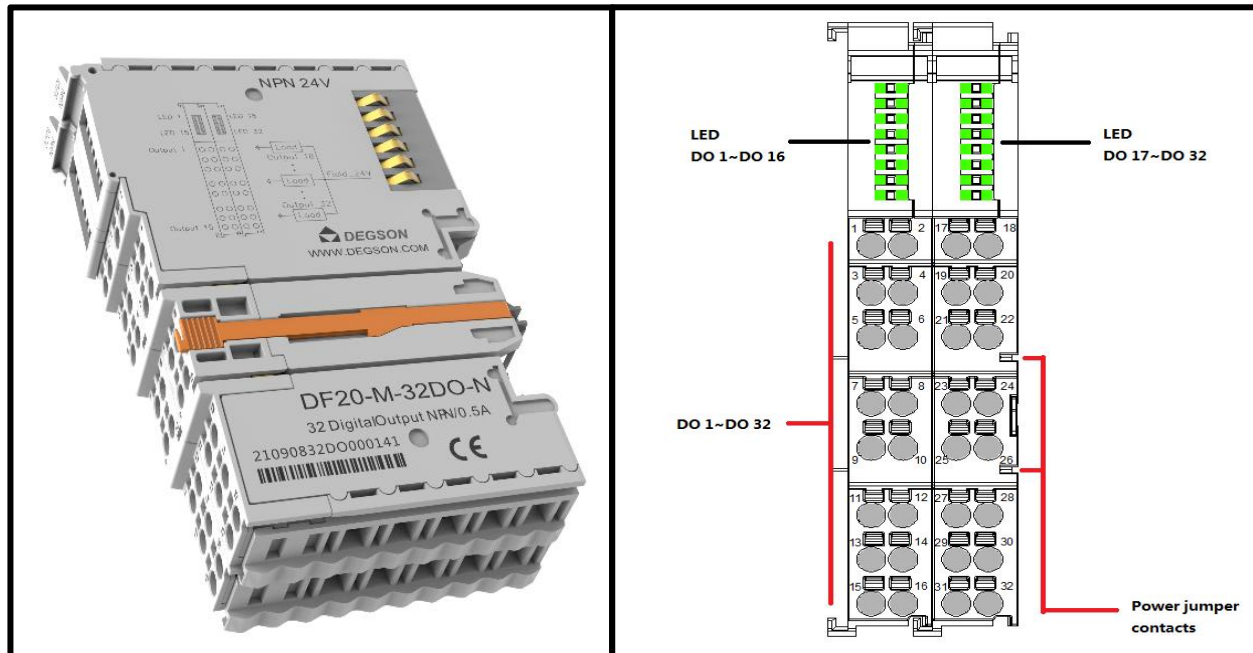
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



32 channel digital output/24VDC/NPN (DF20-M-32DO-N)

- Digital output modules transmit binary signals from automation equipment to connected actuators (solenoid valves, etc.).
- 32-channel digital output, NPN low level active.
- Each input module has an anti-interference filter.
- Each input module has LED indicators.
- The field and system layers are isolated from each other by means of opto-couplers.
- The protection grade is IP20.

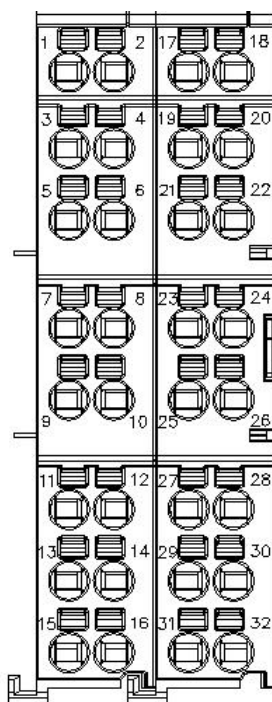


1. Specification parameters

technical information	
Number of digital outputs	32
Total number of channels (modules)	32
signal type	Voltage
voltage signal type	24V DC NPN
connection type	1-wire
output characteristics	Low level trigger
Switching frequency (resistive, lamp)	<1000Hz
Switching frequency (inductive)	<0.2Hz
The response time of the protection circuits, the	<100us
Maximum output current per channel	500 mA
load type	Inductive, resistive, lamp
"0" signal voltage	High resistance state
"1" signal voltage	0V DC
data size	4 byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<100mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	32 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	32 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

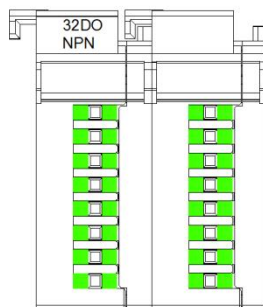
2. hardware interface

Wiring Terminal Definition



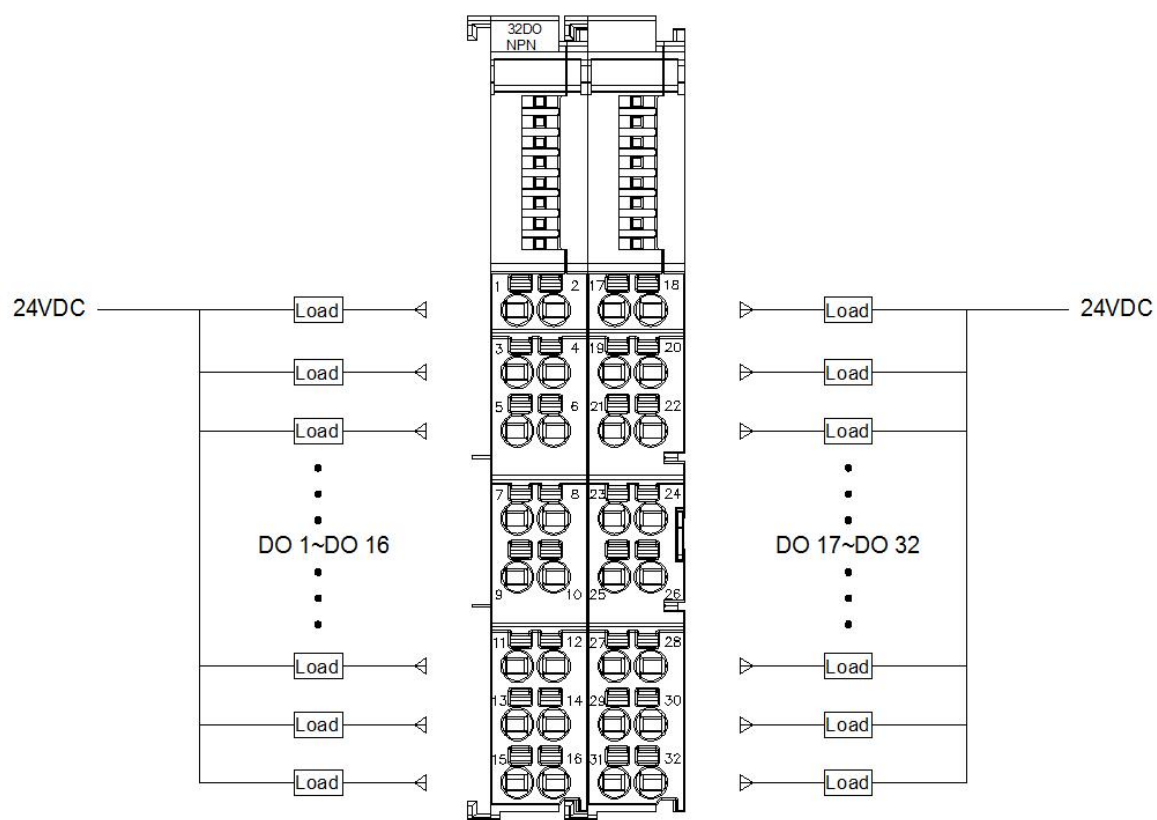
terminal serial number				Signal				Description
1	2	17	18	DO 1	DO 2	DO 17	DO 18	Low level signal output
3	4	19	20	DO 3	DO 4	DO 19	DO 20	
5	6	21	22	DO 5	DO 6	DO 21	DO 22	
7	8	23	24	DO 7	DO 8	DO 23	DO 24	
9	10	25	26	DO 9	DO 10	DO 25	DO 26	
11	12	27	28	DO 11	DO 12	DO 27	DO 28	
13	14	29	30	DO 13	DO 14	DO 29	DO 30	
15	16	31	32	DO 15	DO 16	DO 31	DO 32	

LED indicator definition



1~32 channel indicator	Meaning
light	The output signal is valid
put out	The output signal is invalid

Wiring Diagram



3. process data definitions

- 32-channel digital NPN output module, occupying 2 holding registers and 32 coil status registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description	DF20-M-32DO-N_HoldRegBlock Size:2
0	QB0	1Word	QX0.0	DO0	
			QX0.1	DO1	
			QX0.2	DO2	
			QX0.3	DO3	
			QX0.4	DO4	
			QX0.5	DO5	
			QX0.6	DO6	
			QX0.7	DO7	
	QB1		QX1.0	DO8	
			QX1.1	DO9	
			QX1.2	DO10	
			QX1.3	DO11	
			QX1.4	DO12	
			QX1.5	DO13	
			QX1.6	DO14	
			QX1.7	DO15	
1	QB0	1Word	QX0.0	DO16	
			QX0.1	DO17	
			QX0.2	DO18	
			QX0.3	DO19	
			QX0.4	DO20	
			QX0.5	DO21	
			QX0.6	DO22	
			QX0.7	DO23	
	QB1		QX1.0	DO24	
			QX1.1	DO25	
			QX1.2	DO26	
			QX1.3	DO27	
			QX1.4	DO28	
			QX1.5	DO29	
			QX1.6	DO30	
			QX1.7	DO31	

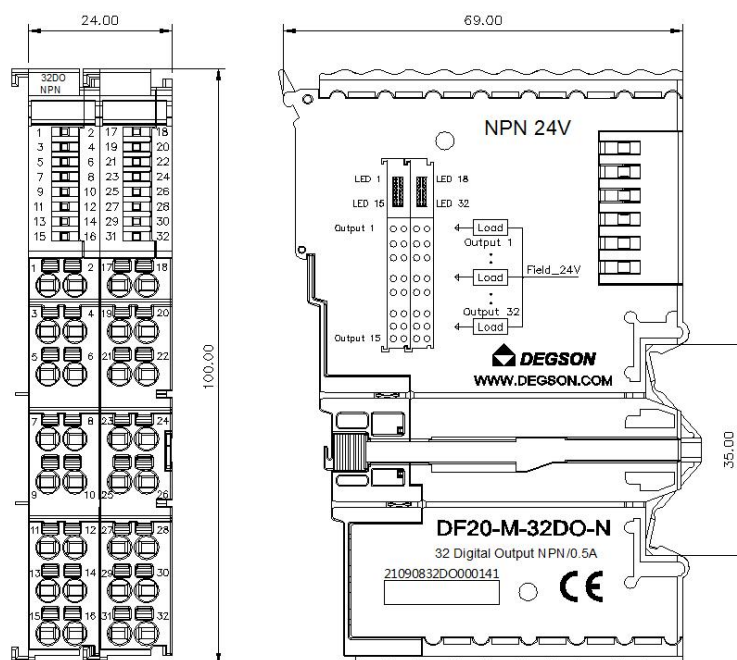
- Coil Status Register Block Data Structure Definition.

CoilReg	Byte	Format	Bit	Description	DF20-M-32DO-N_CoilRegBlock Size:32
0	QB0	Bit	QX0.0	DO0	
1		Bit	QX0.1	DO1	
2		Bit	QX0.2	DO2	
3		Bit	QX0.3	DO3	
4		Bit	QX0.4	DO4	
5		Bit	QX0.5	DO5	

6		Bit	QX0.6	DO6	
7		Bit	QX0.7	DO7	
8	QB1	Bit	QX1.0	DO8	
9		Bit	QX1.1	DO9	
10		Bit	QX1.2	DO10	
11		Bit	QX1.3	DO11	
12		Bit	QX1.4	DO12	
13		Bit	QX1.5	DO13	
14		Bit	QX1.6	DO14	
15		Bit	QX1.7	DO15	
16	QB2	Bit	QX2.0	DO16	
17		Bit	QX2.1	DO17	
18		Bit	QX2.2	DO18	
19		Bit	QX2.3	DO19	
20		Bit	QX2.4	DO20	
21		Bit	QX2.5	DO21	
22		Bit	QX2.6	DO22	
23		Bit	QX2.7	DO23	
24	QB3	Bit	QX3.0	DO24	
25		Bit	QX3.1	DO25	
26		Bit	QX3.2	DO26	
27		Bit	QX3.3	DO27	
28		Bit	QX3.4	DO28	
29		Bit	QX3.5	DO29	
30		Bit	QX3.6	DO30	
31		Bit	QX3.7	DO31	

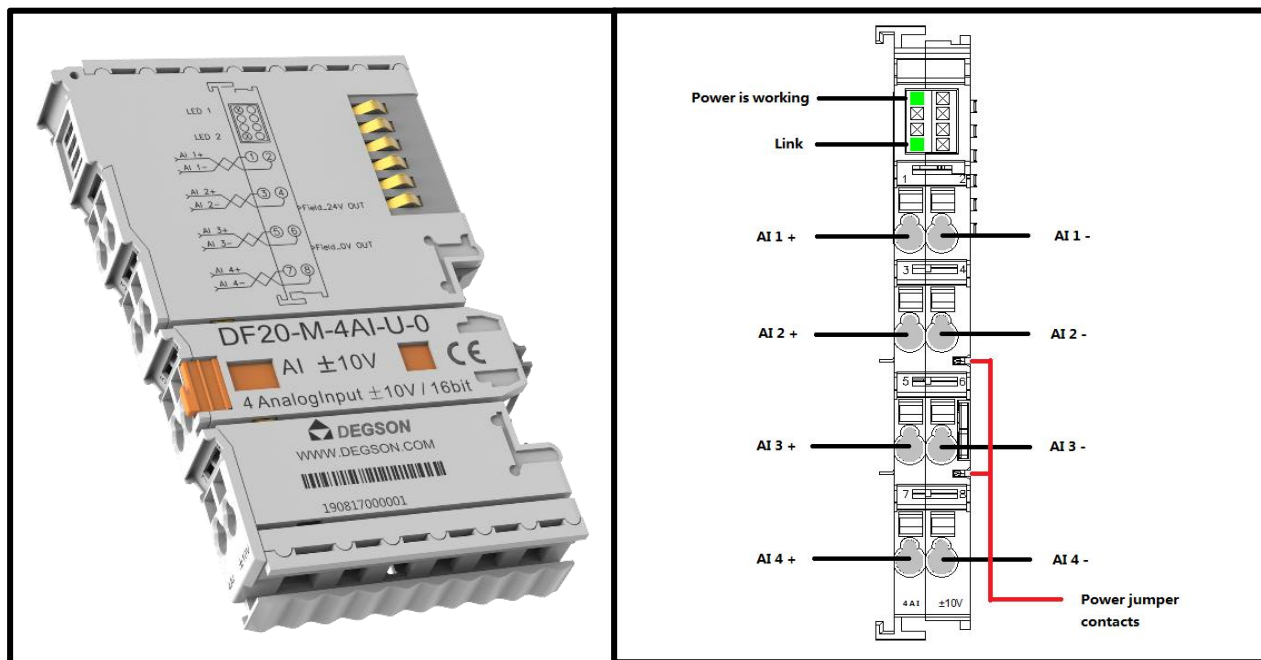
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/voltage type/ $\pm 10V$ (DF20-M-4AI-U-0)

- This analog input module can receive $\pm 10V$ standard signals.
- 4-channel analog input, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

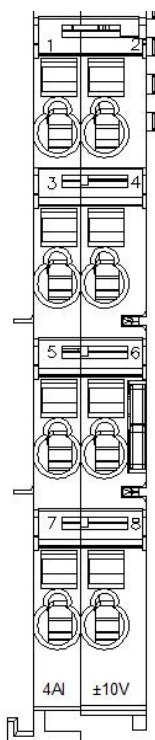


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%
data size	8 Byte
Measuring range	Voltage type (-10~+10V)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(-10~+10V) -27648~27648
Code value range (other buses)	(-10~+10V) -32768~32767
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	>450K Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

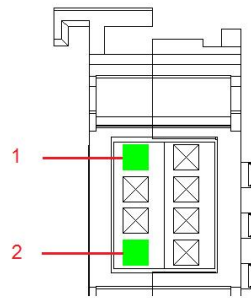
2. hardware interface

Wiring Terminal Definition



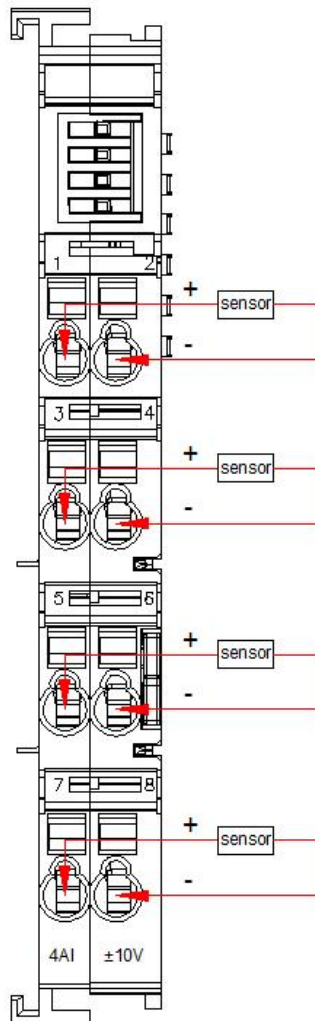
terminal serial number	Signal	Description
1	AI 1 positive pole	Voltage input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Voltage input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Voltage input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Voltage input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

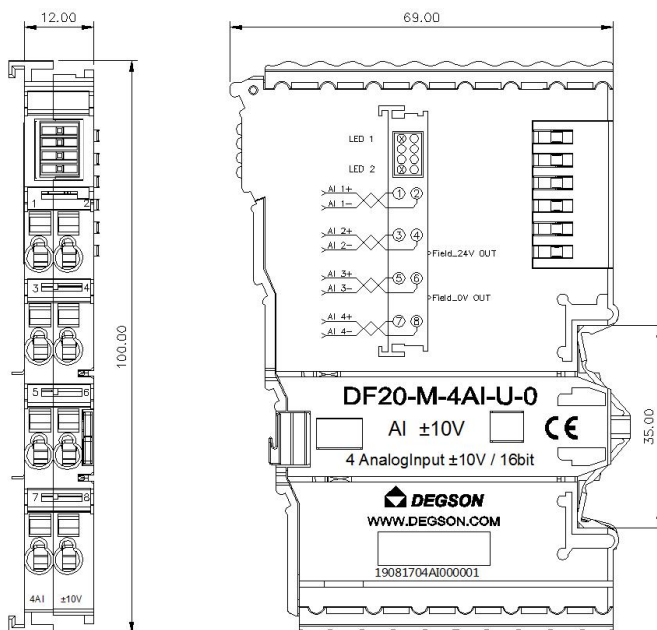
HoldReg	Byte	Format	Description	DF20-M-4AI-U-0_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- Data description.

signal range	Voltage value(U)	decimal data	hexadecimal data	Scope note	transformational relationship
±10V	10V	32767	0x7FFF	Normal range	$D = 32767 \times U / 10$ $U = D \times 10 / 32767$
	0V	0	0		
	-10V	-32768	0x8000		

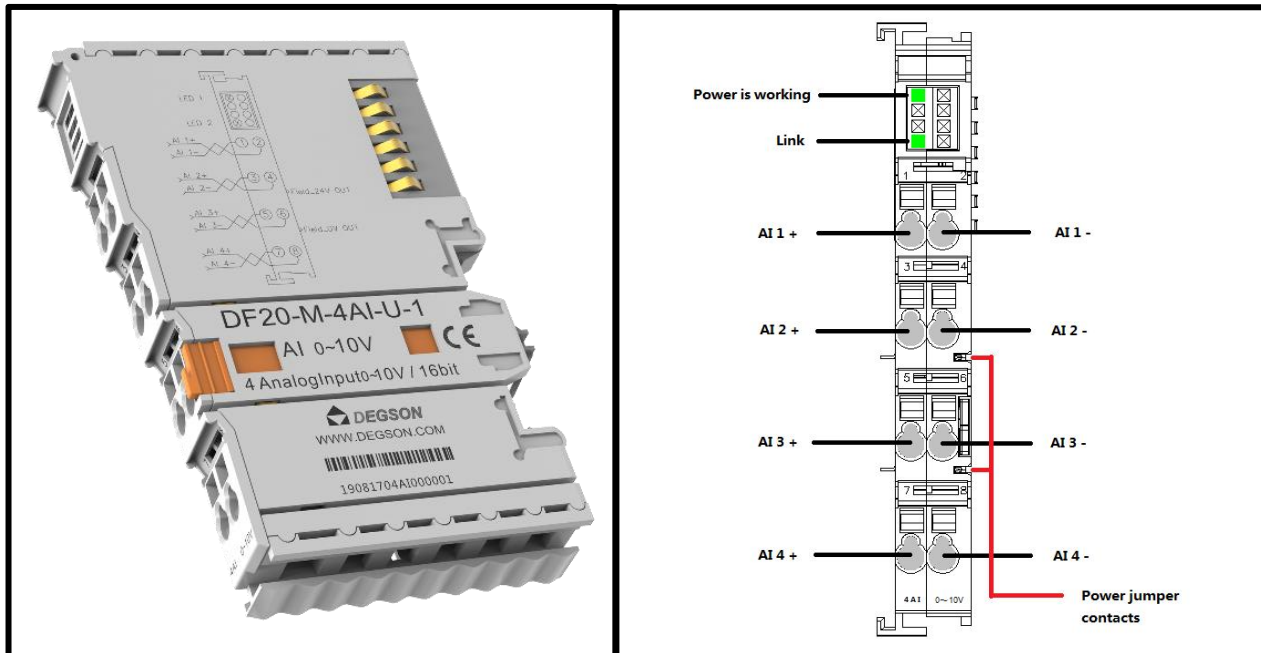
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/voltage type/0~10V (DF20-M-4AI-U-1)

- This analog input module can receive 0~10V standard signals.
- 4-channel analog input, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

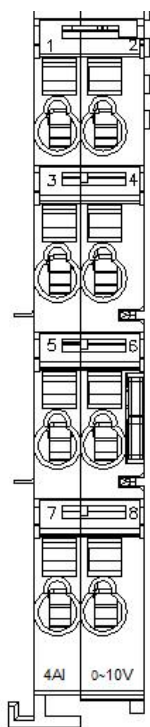


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%
data size	8 Byte
Measuring range	Voltage type (0~+10V)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~+10V) 0~27648
Code value range (other buses)	(0~+10V) 0~65535
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	>450K Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

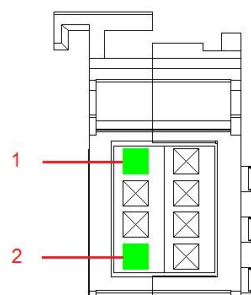
2. hardware interface

Wiring Terminal Definition



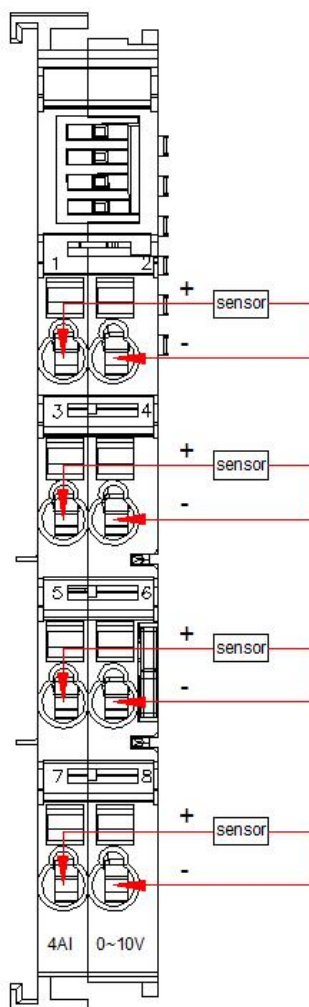
terminal serial number	Signal	Description
1	AI 1 positive pole	Voltage input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Voltage input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Voltage input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Voltage input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

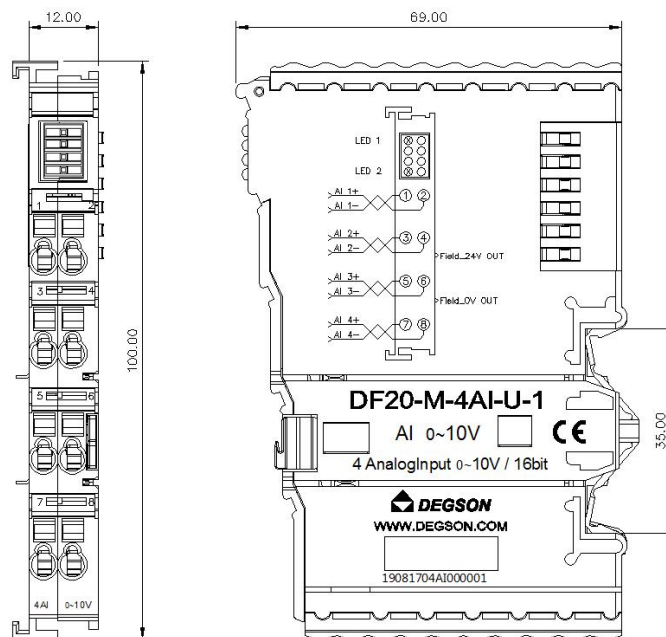
HoldReg	Byte	Format	Description	DF20-M-4AI-U-1_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- Data description.

signal range	Voltage value(U)	decimal data	hexadecimal data	Scope note	transformational relationships
0~10V	10V	65535	0xFFFF	Normal range	$D = 65535 \times U / 10$ $U = D \times 10 / 65535$
	5V	32767	0x7FFF		
	0V	0	0		

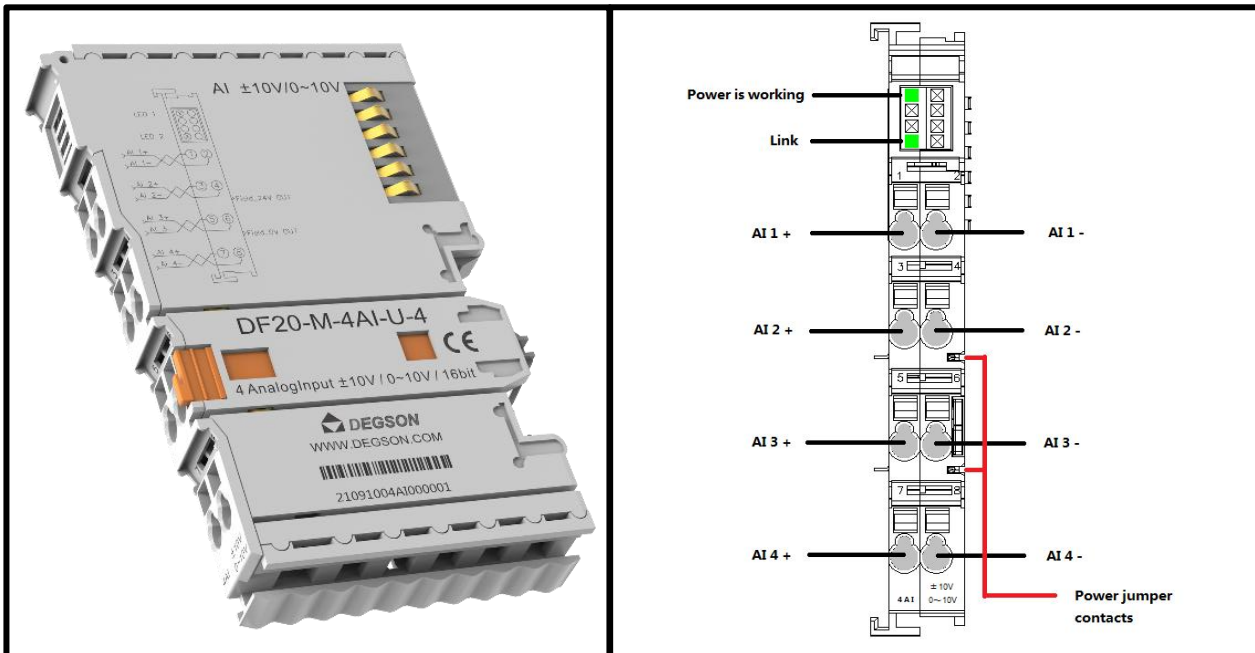
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/voltage type/ $\pm 10V$, 0~10V (DF20-M-4AI-U-4)

- This analog input module can receive $\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$ standard signals.
- 4-channel analog input, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

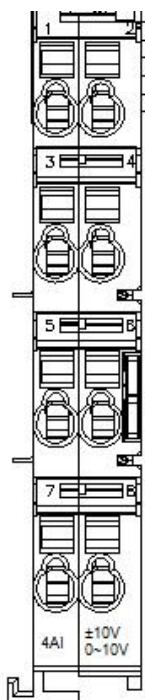


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%
data size	8 Byte
Measuring range	Voltage type ($\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~+10V) 0~27648 (- 10~+10V) -27648~27648
Code value range (other buses)	(0~+10V) -32768~32767 (- 10~+10V) -32768~32767
Sampling frequency	20~300Hz(configurable)
Conversion time	1ms
internal resistance	>450K Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

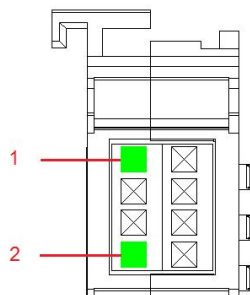
2. hardware interface

Wiring Terminal Definition



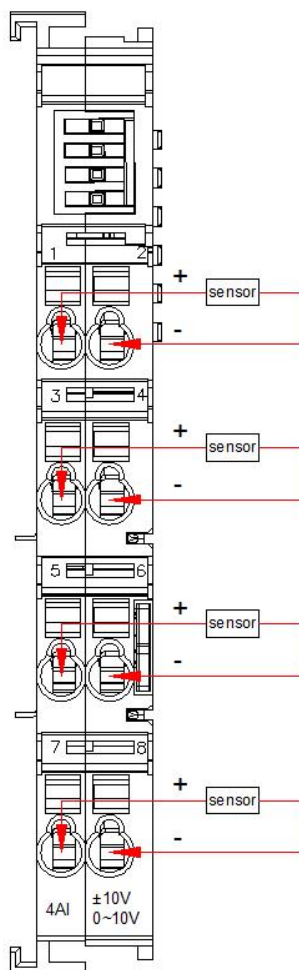
terminal serial number	Signal	Description
1	AI 1 positive pole	Voltage input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Voltage input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Voltage input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Voltage input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4AI-U-4_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- process data definition statement

signal range	Voltage	decimal	hexadecimal	Scope note	transformational
±10V (-32768~32767)	>10V	32767	0x7FFF	overflow	D = 32767 x U / 10 U = D x 10 / 32767
	10V	32767	0x7FFF	Normal range	
	0V	0	0		
	-10V	-32768	0x8000		
	<-10V	-32768	0x8000	Underflow	
0~10V (0~32767)	>10V	32767	0x7FFF	overflow	D = 32767 x U / 10 U = D x 10 / 32767
	10V	32767	0x7FFF	Normal range	
	5V	16384	0x4000		
	0V	0	0		
	<0V	0	0	Underflow	
2~10V (0~32767)	>10V	32767	0x7FFF	overflow	D = 32767 x (U – 2) / 8 U = D x 8 / 32767 + 2
	10V	32767	0x7FFF	Normal range	
	6V	16384	0x4000		
	2V	0	0		
	<2V	0	0	Underflow	

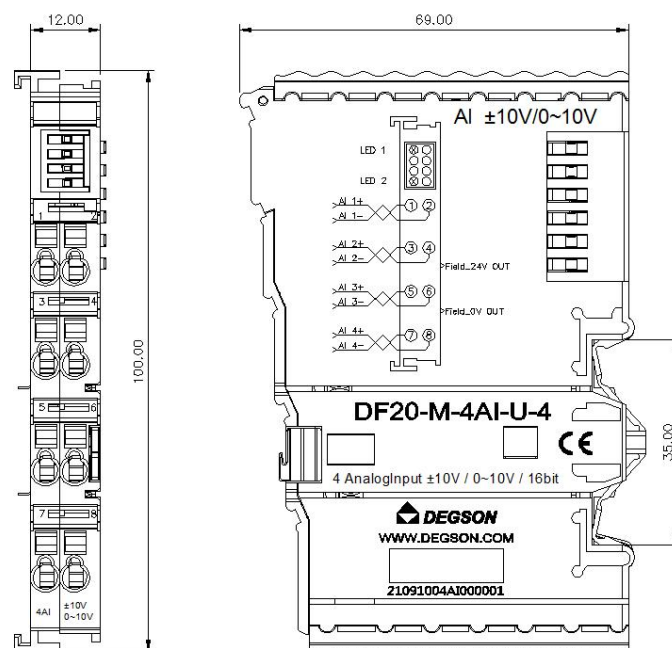
±5V (-32768~32767)	>5V327670x7FFFoverflow				D = 32767 x U / 5 U = D x 5 / 32767
	5V327670x7FFF				
	0V00x0000Normal range				
	-5V-327680x8000				
	<-5V-327680x8000Underflow				
0~5V (0~32767)	>5V327670x7FFFoverflow				D = 32767 x U / 5 U = D x 5 / 32767
	5V327670x7FFF				
	2.5V163840x4000Normal range				
	0V00				
	<0V00Underflow				
1~5V (0~32767)	>5V327670x7FFFoverflow				D = 32767 x (U – 1) / 4 U = D x 4 / 32767 + 1
	5V327670x7FFF				
	3V163840x4000Normal range				
	1V00				
	<1V00Underflow				
signal range	Voltage	decimal	hexadecimal	Scope note	transformational
±10V (-27648~27648)	>11.76V327670x7FFFoverflow				D = 27648 x U / 10 U = D x 10 / 27648
	11.76V325110x7EFFUpper limit				
	10V276480x6C00				
	5V138240x3600				
	0V00x0000Normal range				
	-10V-276480x9400				

	-11.76V	-32511	0x8100	Lower limit	
	<-11.76V	-32768	0x8000	Underflow	
0~10V (0~27648)	>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 (0~27648)	>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	
	6V	13824	0x3600		
	2V	0	0x0000		
	0.59 V	-4864	0xED00	Lower limit	
	<0.59 V	-32768	0x8000	Underflow	
±5V (-27648~27648)	>5.88V	32767	0x7FFF	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	
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		
	0V	0	0x0000		
1~5V (0~27648)	>5.7V	32767	0x7FFF	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	
	<0.3V	-32768	0x8000	Underflow	

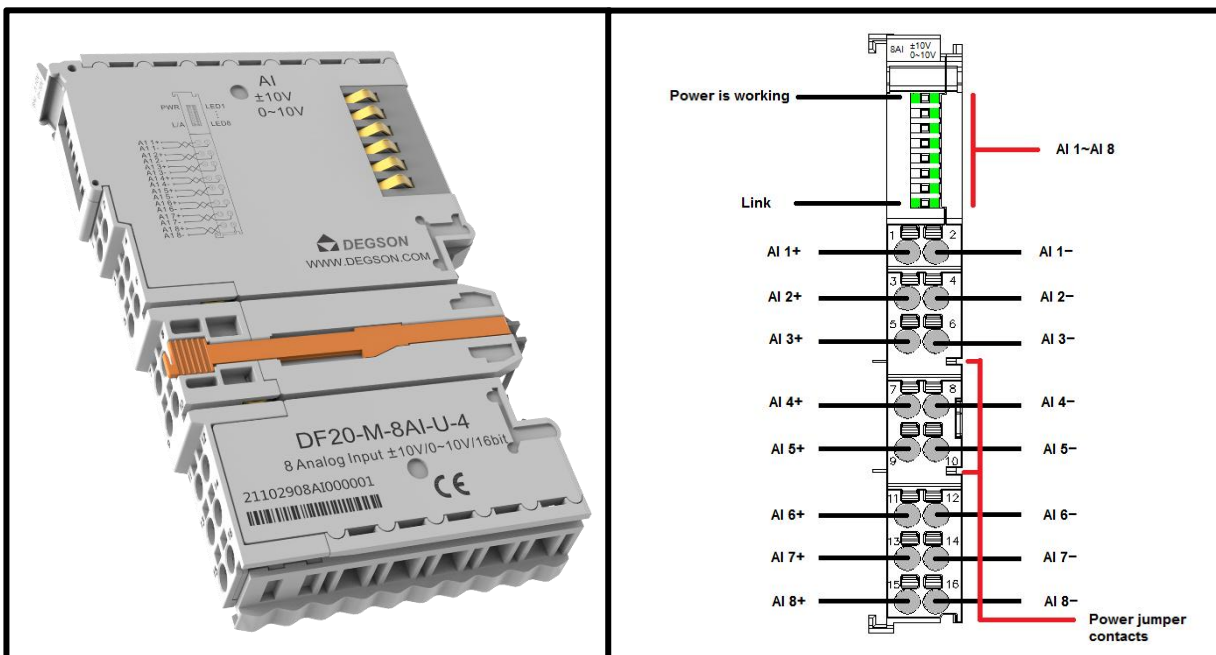
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel analog input/voltage type/ $\pm 10V$, 0~10V (DF20-M-8AI-U-4)

- This analog input module can receive $\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$ standard signals.
- 8-channel analog input, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each input channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

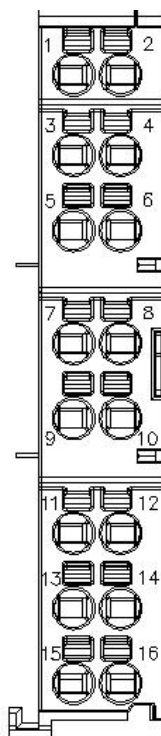


1. Specification parameters

technical information	
Number of channels	8
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%
data size	16 Byte
Measuring range	Voltage type ($\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<200mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~+10V) 0~27648 (- 10~+10V) -27648~27648
Code value range (other buses)	(0~+10V) -32768~32767 (- 10~+10V) -32768~32767
Sampling frequency	20~300Hz(configurable)
Conversion time	1ms
internal resistance	>450K Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	10 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

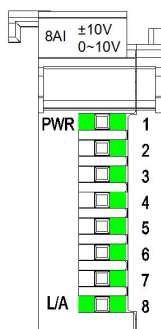
2. hardware interface

Wiring Terminal Definition



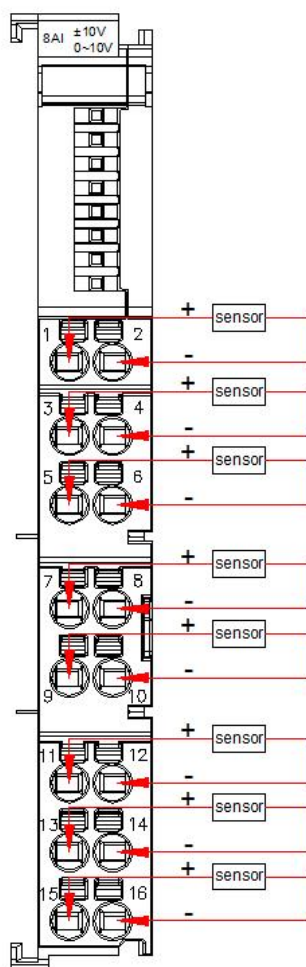
terminal serial number		Signal		Description
1	2	AI 1 positive pole	AI 1 negative pole	Voltage input channel 1
3	4	AI 2 positive pole	AI 2 negative pole	Voltage input channel 2
5	6	AI 3 positive pole	AI 3 negative pole	Voltage input channel 3
7	8	AI 4 positive pole	AI 4 negative pole	Voltage input channel 4
9	10	AI 5 positive pole	AI 5 negative pole	Voltage input channel 5
11	12	AI 6 positive pole	AI 6 negative pole	Voltage input channel 6
13	14	AI 7 positive pole	AI 7 negative pole	Voltage input channel 7
15	16	AI 8 positive pole	AI 8 negative pole	Voltage input channel 8

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
2	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
3	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
4	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
5	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
6	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
7	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
8	The green light is always on		input signal is valid
	Green light out		Input signal is invalid

Wiring Diagram



3. process data definitions

- 8-channel voltage type analog input module, occupying 8 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-8AI-U-4_HoldRegBlock Size:8
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			
4	IB8	1Word	CH_4	
	IB9			
5	IB10	1Word	CH_5	
	IB11			
6	IB12	1Word	CH_6	
	IB13			
7	IB14	1Word	CH_7	
	IB15			

- process data definition statement

signal range	Voltage	decimal data	hexadecimal	Scope	transformational
±10V (-32768~32767)	>10V	32767	0x7FFF	overflow	D = 32767 x U / 10 U = D x 10 / 32767
	10V	32767	0x7FFF	Normal range	
	0V	0	0		
	-10V	-32768	0x8000		
	<-10V	-32768	0x8000	Underflo	
0~10V (0~32767)	>10V	32767	0x7FFF	overflow	D = 32767 x U / 10 U = D x 10 / 32767
	10V	32767	0x7FFF	Normal range	
	5V	16384	0x4000		
	0V	0	0		
	<0V	0	0	Underflo	
2~10V	>10V	32767	0x7FFF	overflow	D = 32767 x (U – 2) /

	10V	32767	0x7FFF	Normal range	
	6V	16384	0x4000		
	2V	0	0		
	<2V	0	0	Underflo	
±5V (-32768~32767)	>5V	32767	0x7FFF	overflow	D = 32767 x U / 5 U = D x 5 / 32767
	5V	32767	0x7FFF	Normal range	
	0V	0	0x0000		
	-5V	-32768	0x8000		
	<-5V	-32768	0x8000	Underflo	
0~5V (0~32767)	>5V	32767	0x7FFF	overflow	D = 32767 x U / 5 U = D x 5 / 32767
	5V	32767	0x7FFF	Normal range	
	2.5V	16384	0x4000		
	0V	0	0		
	<0V	0	0	Underflo	
1~5V (0~32767)	>5V	32767	0x7FFF	overflow	D = 32767 x (U – 1) / 4 U = D x 4 / 32767 + 1
	5V	32767	0x7FFF	Normal range	
	3V	16384	0x4000		
	1V	0	0		
	<1V	0	0	Underflo	

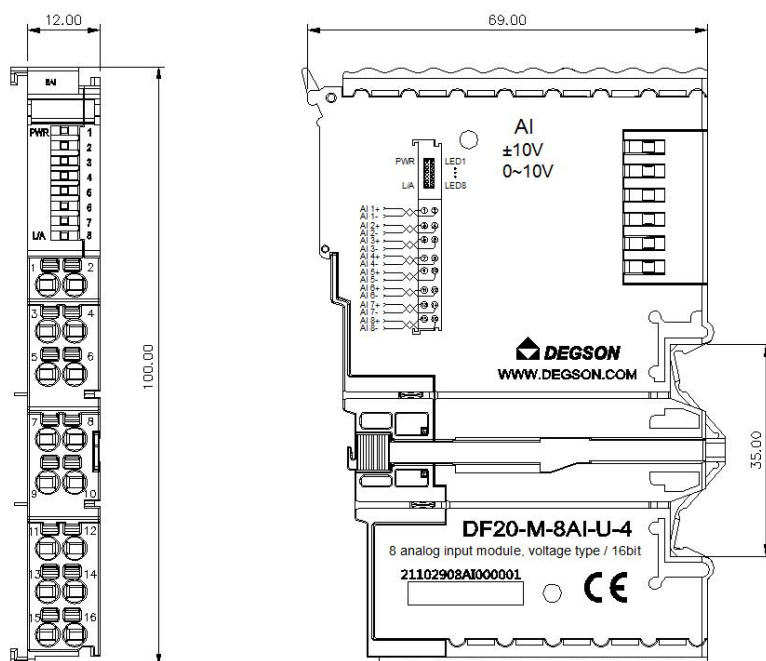
signal range	Voltage	decimal data	hexadecimal	Scope	transformational
±10V (-27648~27648)	>11.76V	32767	0x7FFF	overflow	D = 27648 x U / 10 U = D x 10 / 27648
	11.76V	32511	0x7EFF	Upper limit	
	10V	27648	0x6C00	Normal range	
	5V	13824	0x3600		

	0V	0	0x0000		
	-5V	-13824	0xCA00		
	-10V	-27648	0x9400		
	-11.76V	-32511	0x8100	Lower limit	
	<-11.76V	-32768	0x8000	Underflow	
0~10V (0~27648)	>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 (0~27648)	>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	
	6V	13824	0x3600		
	2V	0	0x0000		
	0.59 V	-4864	0xED00	Lower limit	
	<0.59 V	-32768	0x8000	Underflow	
±5V (-27648~27648)	>5.88V	32767	0x7FFF	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	
	<-5.88V	-32768	0x8000	Underflow	

0~5V (0~27648)	>5.88V	32767	0x7FFF	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 (0~27648)	>5.7V	32767	0x7FFF	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	
	<0.3V	-32768	0x8000	Underflow	

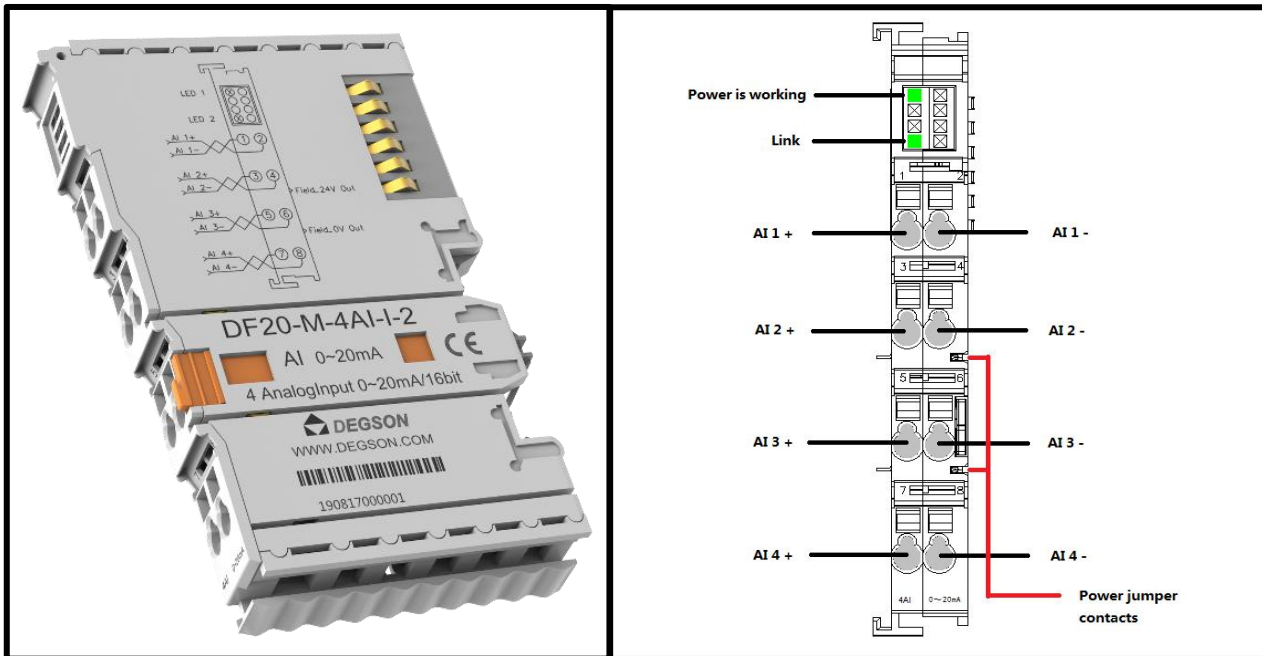
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/current type/0-20mA (DF20-M-4AI-I-2)

- This analog input module can receive 0~20mA standard signals.
- 4-channel analog input, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- The protection grade is IP20.

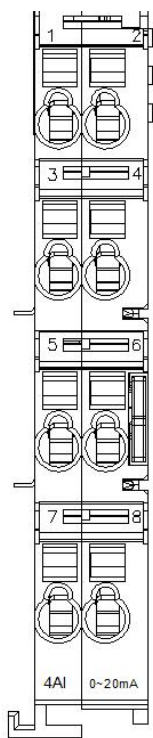


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%/±50ppm/K max.
data size	8 Byte
Measuring range	Current type (0~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (-15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~20mA) 0~27648
Code value range (other buses)	(0~20mA) 0~65535
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	100Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

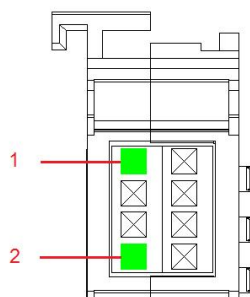
2. hardware interface

Wiring Terminal Definition



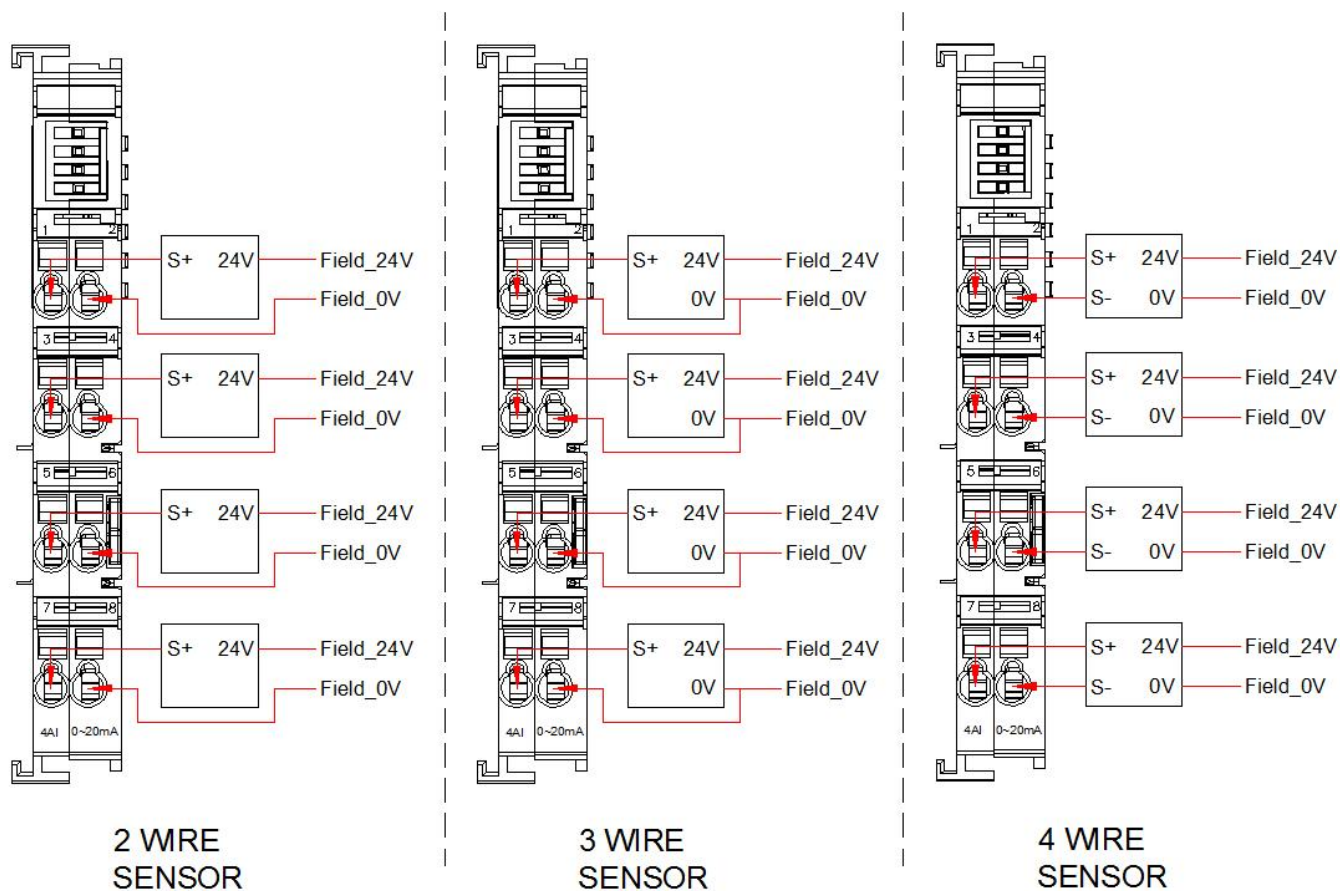
terminal serial number	Signal	Description
1	AI 1 positive pole	Current input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Current input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Current input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Current input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel current type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

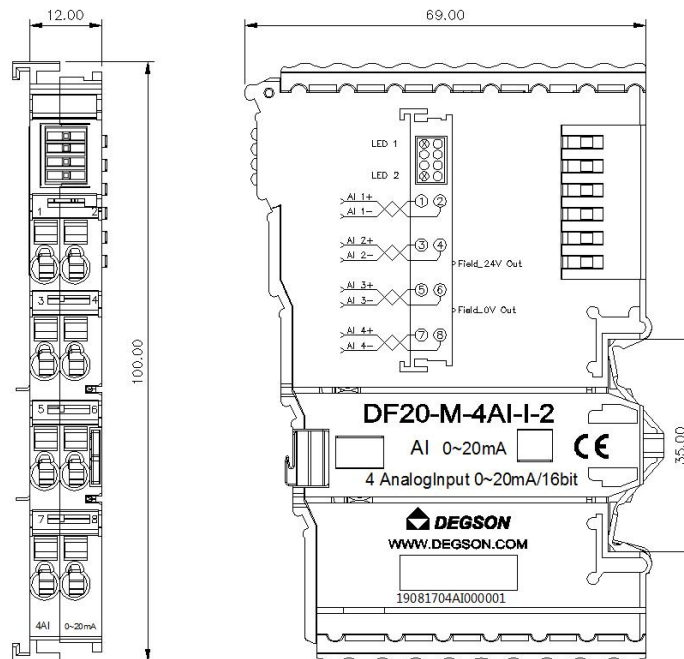
HoldReg	Byte	Format	Description	DF20-M-4AI-I-2_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- Data description.

signal range	Current value(I)	decimal data	hexadecimal data	Scope	transformational relationships
0~20 mA	20mA	65535	0xFFFF	Normal range	$D = 65535 \times I / 20$ $I = D \times 20 / 65535$

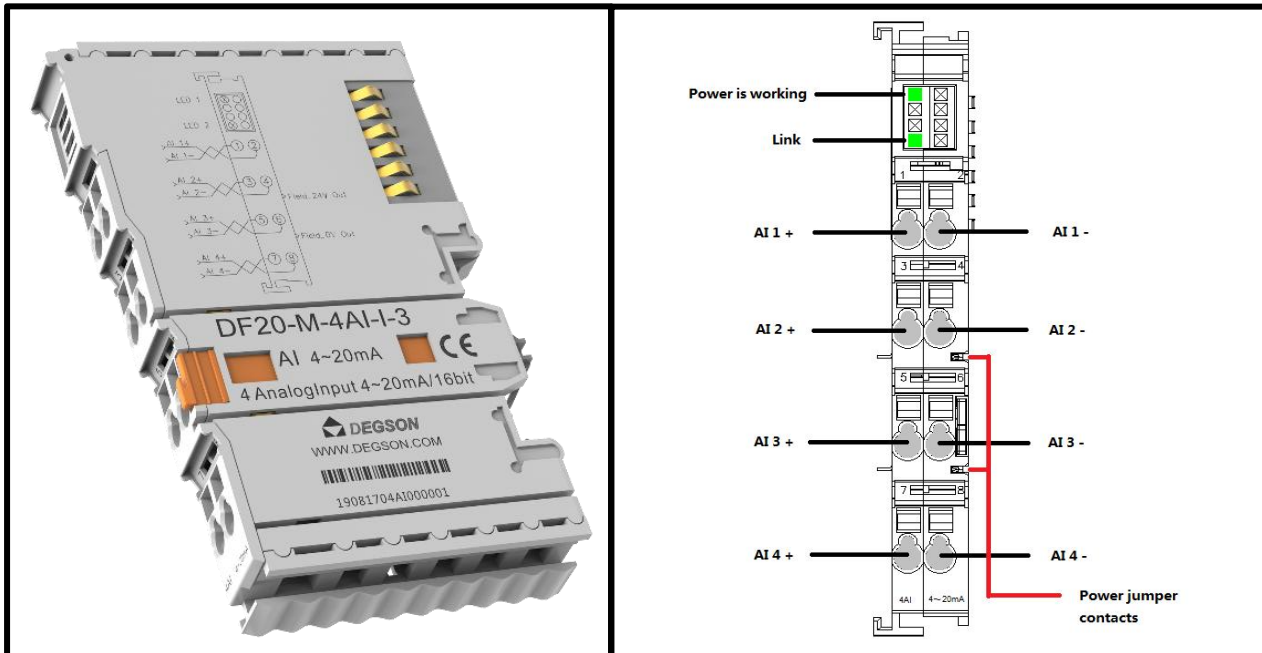
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/current type/4-20mA (DF20-M-4AI-I-3)

- This analog input module can receive 4~20mA standard signals.
- 4-channel analog input, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- The protection grade is IP20.

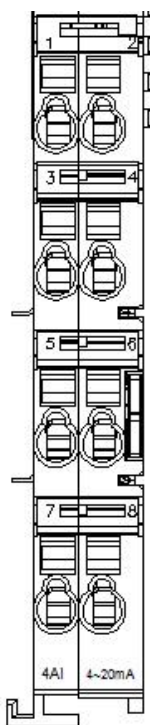


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%/±50ppm/K max.
data size	8 Byte
Measuring range	Current type (4~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (-15%~+20%)
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(4~20mA) 0~27648
Code value range (other buses)	(4~20mA) 0~65535
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	100 Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

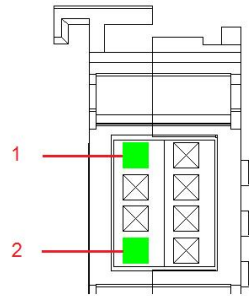
2. hardware interface

Wiring Terminal Definition



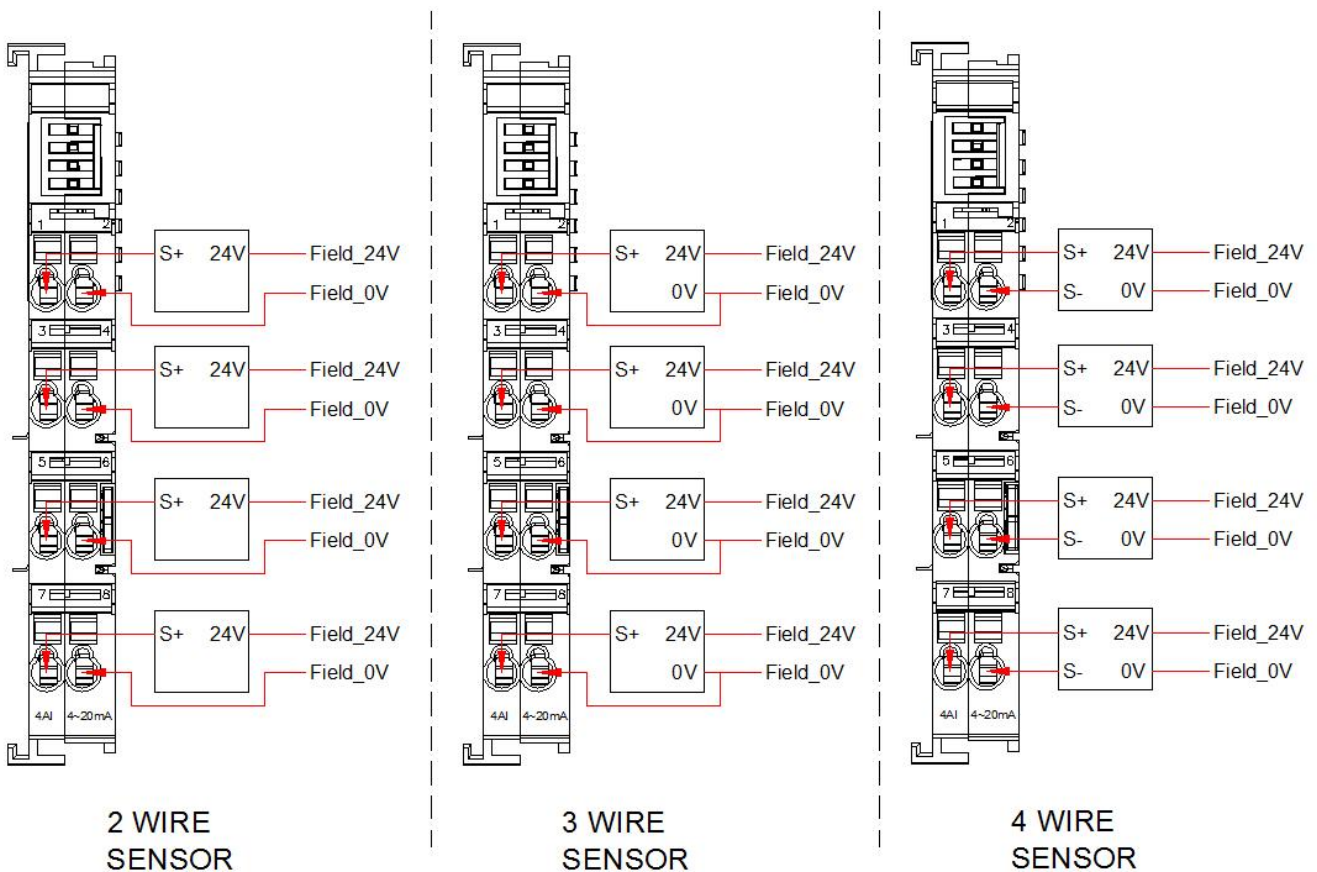
terminal serial number	Signal	Description
1	AI 1 positive pole	Current input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Current input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Current input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Current input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel current type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

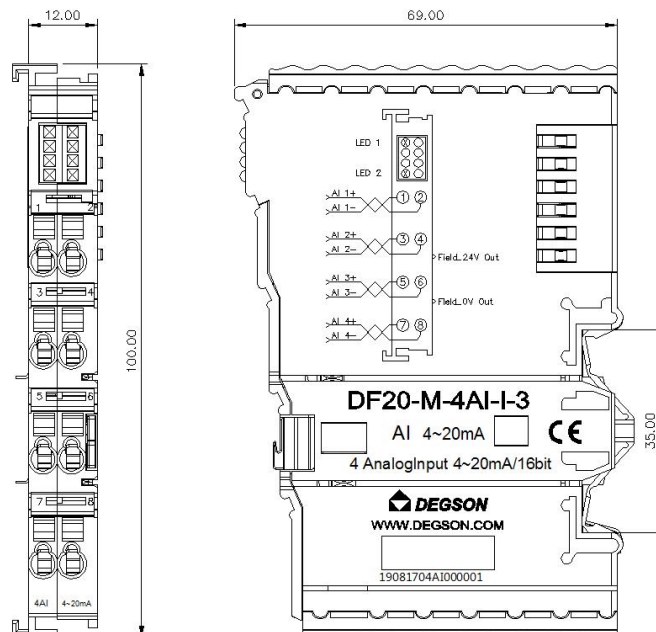
HoldReg	Byte	Format	Description	DF20-M-4AI-I-3_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- Data description.

signal range	Current value(I)	decimal data	hexadecimal data	Scope	transformational relationships
4~20 mA	20mA	65535	0xFFFF	Normal range	$D = 65535 \times (I - 4) / 16$ $I = D \times 16 / 65535 + 4$
	12mA	32767	0x7FFF		
	4mA	0	0		

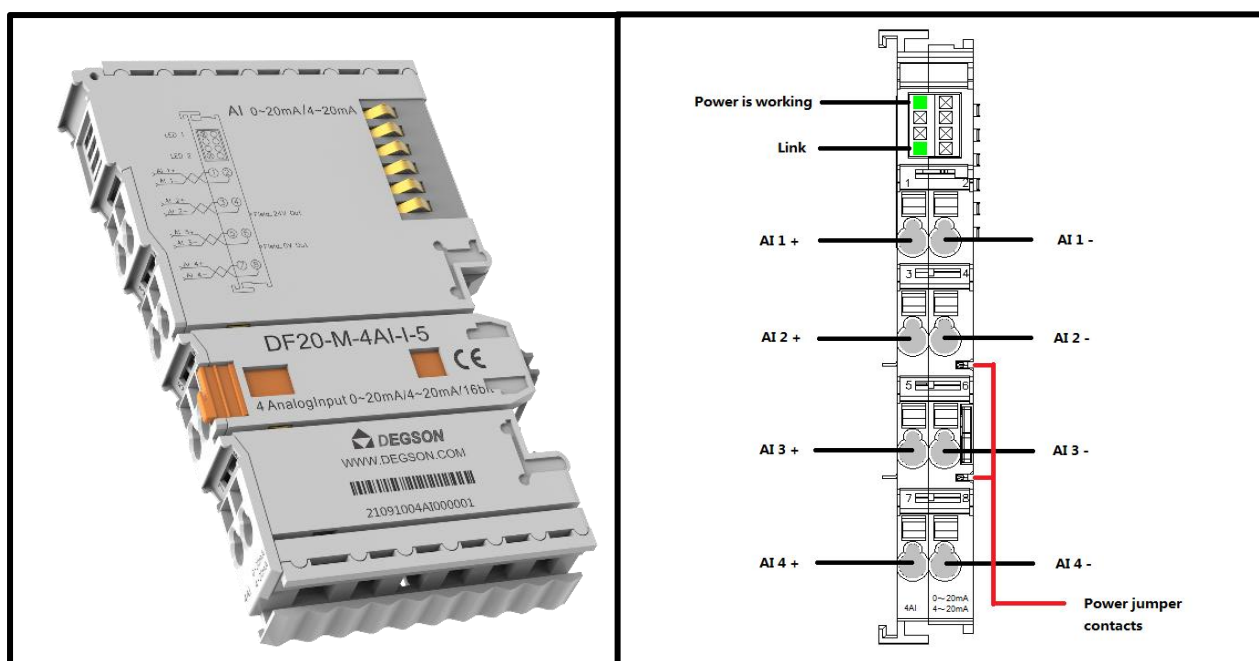
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog input/current type/0~20mA, 4~20mA (DF20-M-4AI-I-5)

- This analog input module can receive 0~20mA, 4~20mA standard signals.
- 4-channel analog input, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

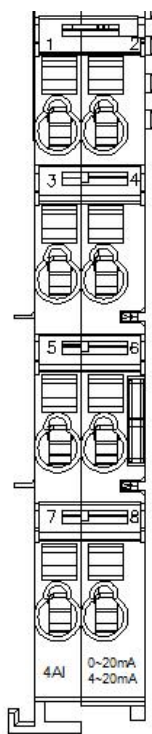


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%/±50ppm/K max.
data size	8 Byte
Measuring range	Current type (0~20mA/4~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<120mA
Operating voltage	24VDC (-15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~20mA/4~20mA) 0~27648
Code value range (other buses)	(0~20mA/4~20mA) 0~65535
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	100Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

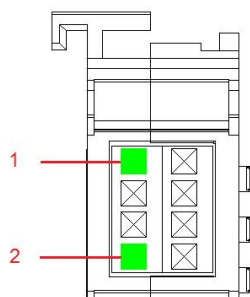
2. hardware interface

Wiring Terminal Definition



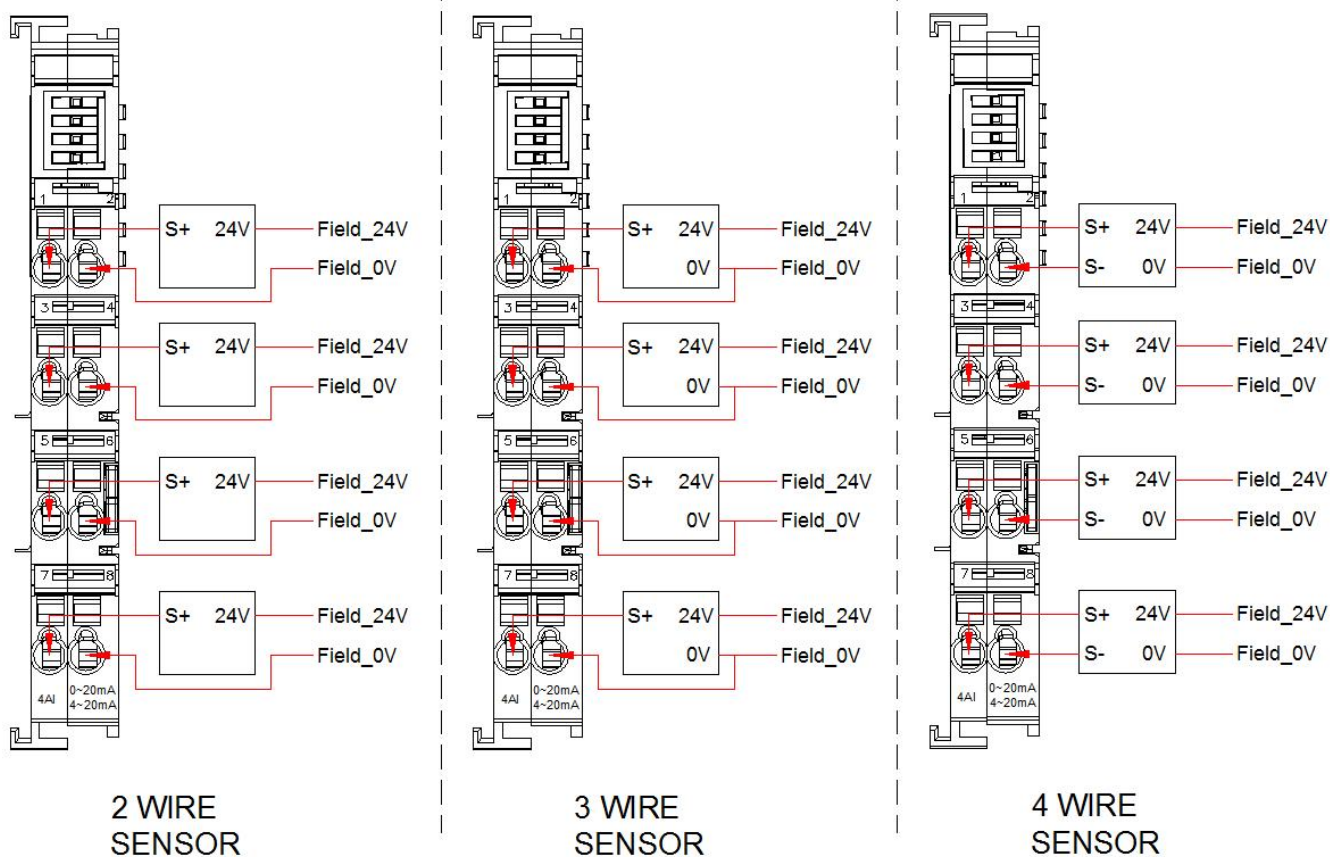
terminal serial number	Signal	Description
1	AI 1 positive pole	Current input channel 1
2	AI 1 negative pole	
3	AI 2 positive pole	Current input channel 2
4	AI 2 negative pole	
5	AI 3 positive pole	Current input channel 3
6	AI 3 negative pole	
7	AI 4 positive pole	Current input channel 4
8	AI 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel current type analog input module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4AI-I-5_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

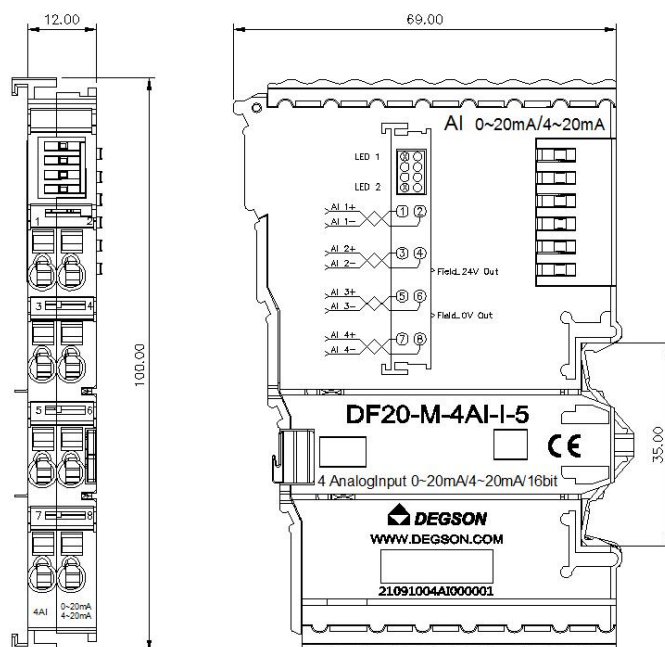
- process data definition statement

signal range	Current value(I)	decimal data	hexadecimal data	Scope	transformational relationships
0 ~ 20 mA (0~65535)	>20mA	65535	0xFFFF	overflow	D = 65535 x I / 20 I = D x 20 / 65535
	20mA	65535	0xFFFF	Normal range	
	10mA	32767	0x7FFF		
	0	0	0		
	<0mA	0	0	Underflow	
4~20 mA (0~65535)	>20mA	65535	0xFFFF	overflow	D = 65535 x (I – 4) / 16 I= D x 16 / 65535 + 4
	20mA	65535	0xFFFF	Normal range	
	12mA	32767	0x7FFF		
	4mA	0	0		
	<4mA	0	0	Underflo	

				w	
	>23.52 mA	32767	0x7FFF	overflow	
				Upper	
0 ~ 20 mA	23.52 mA	32511	0x7EFF	limit	$D = 27648 \times I / 20$
(0~27648)				value	$I = D \times 20 / 27648$
	20 mA	27648	0x6C00		
				Normal	
	10 mA	13824	0x3600		
				range	
	0 mA	0	0		
	>22.81 mA	32767	0x7FFF	overflow	
				Upper	
	22.81 mA	32511	0x7EFF	limit	
				value	
	20 mA	27648	0x6C00		
				Normal	$D = 27648 \times (I - 4) /$
4 ~ 20 mA	12 mA	13824	0x3600		16
(0~27648)	4 mA	0	0		$I = D \times 16 / 27648 + 4$
				Lower	
	1.19 mA	-4864	0xED00	limit	
				value	
	<1.19 mA	-32768	0x8000	Underflo	
				w	

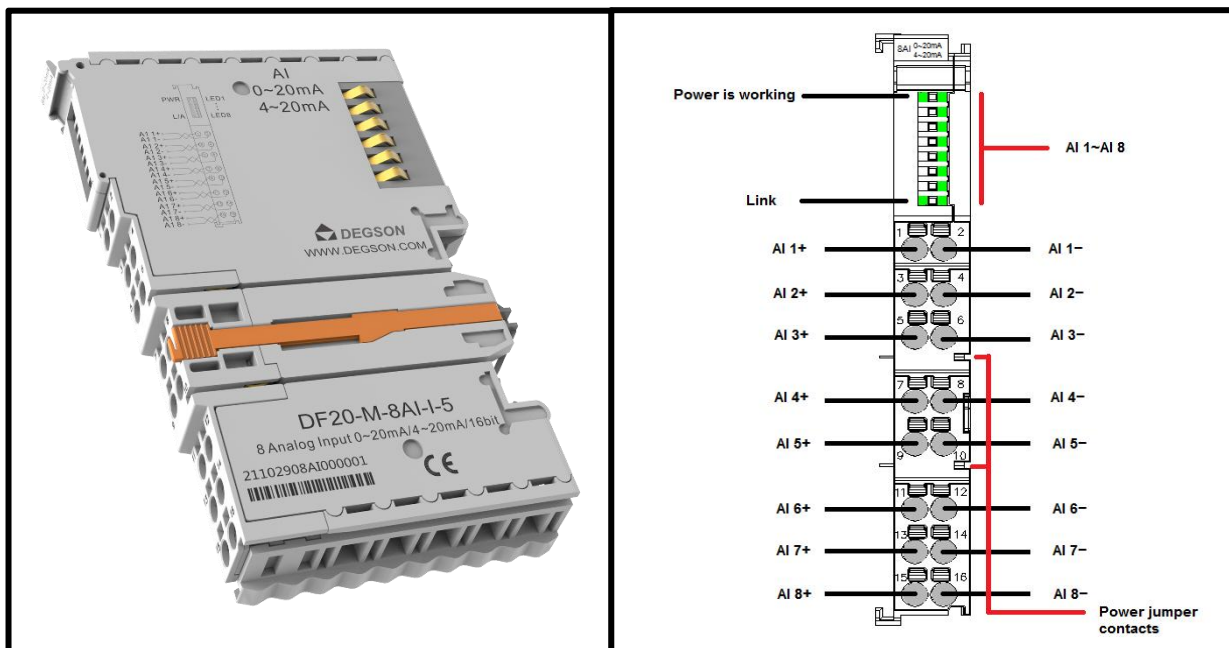
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel analog input/current type/0~20mA, 4~20mA (DF20-M-8AI-I-5)

- This analog input module can receive 0~20mA, 4~20mA standard signals.
- 8-channel analog input, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each input channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmitted in 16-bit resolution.
- Protection grade IP20

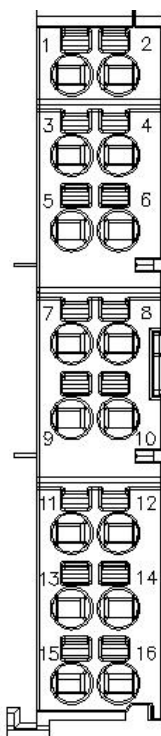


1. Specification parameters

technical information	
Number of channels	8
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.20%/±50ppm/K max.
data size	16 Byte
Measuring range	Current type (0~20mA/4~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<200mA
Operating voltage	24VDC (-15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~20mA/4~20mA) 0~27648
Code value range (other buses)	(0~20mA/4~20mA) 0~65535
Sampling frequency	20~300Hz(configurable)
Conversion time	<1ms
internal resistance	100Ω
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	10 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

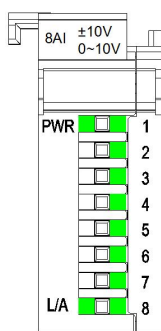
2. hardware interface

Wiring Terminal Definition



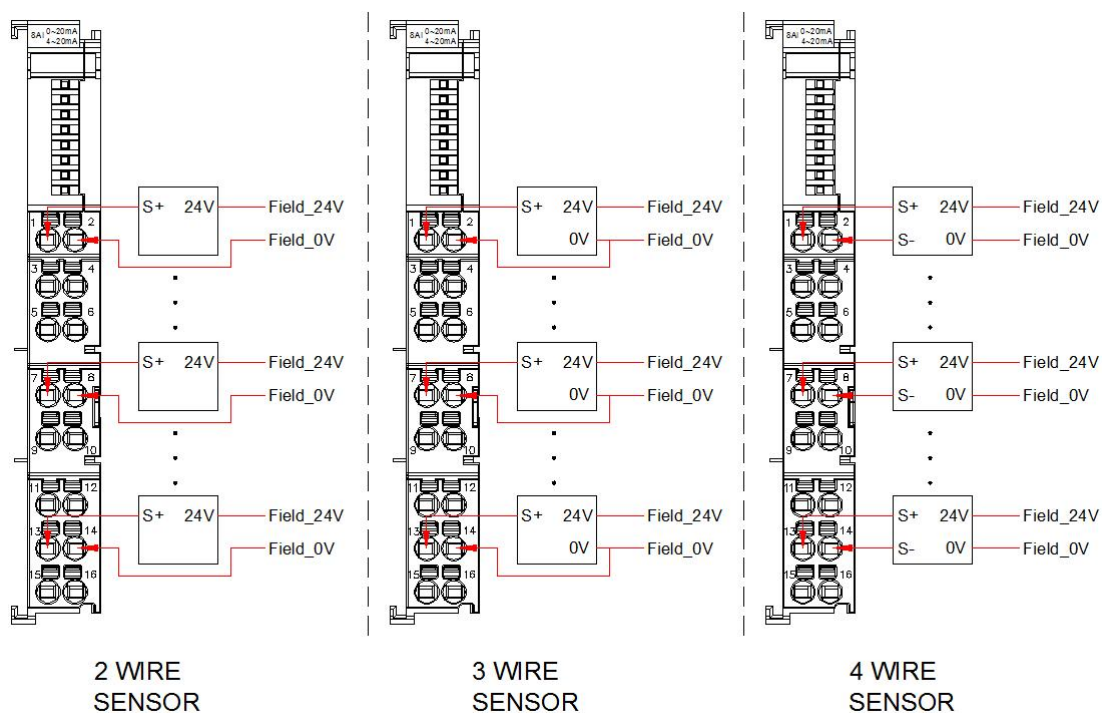
terminal serial number		Signal		Description
1	2	AI 1 positive pole	AI 1 negative pole	Current input channel 1
3	4	AI 2 positive pole	AI 2 negative pole	Current input channel 2
5	6	AI 3 positive pole	AI 3 negative pole	Current input channel 3
7	8	AI 4 positive pole	AI 4 negative pole	Current input channel 4
9	10	AI 5 positive pole	AI 5 negative pole	Current input channel 5
11	12	AI 6 positive pole	AI 6 negative pole	Current input channel 6
13	14	AI 7 positive pole	AI 7 negative pole	Current input channel 7
15	16	AI 8 positive pole	AI 8 negative pole	Current input channel 8

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
2	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
3	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
4	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
5	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
6	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
7	The green light is always on		input signal is valid
	Green light out		Input signal is invalid
8	The green light is always on		input signal is valid
	Green light out		Input signal is invalid

Wiring Diagram



3. Process data definitions

- 8-channel current type analog input module, occupying 8 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-8AI-I-5_HoldRegBlock Size:8
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			
4	IB8	1Word	CH_4	
	IB9			
5	IB10	1Word	CH_5	
	IB11			
6	IB12	1Word	CH_6	
	IB13			
7	IB14	1Word	CH_7	
	IB15			

- process data definition statement

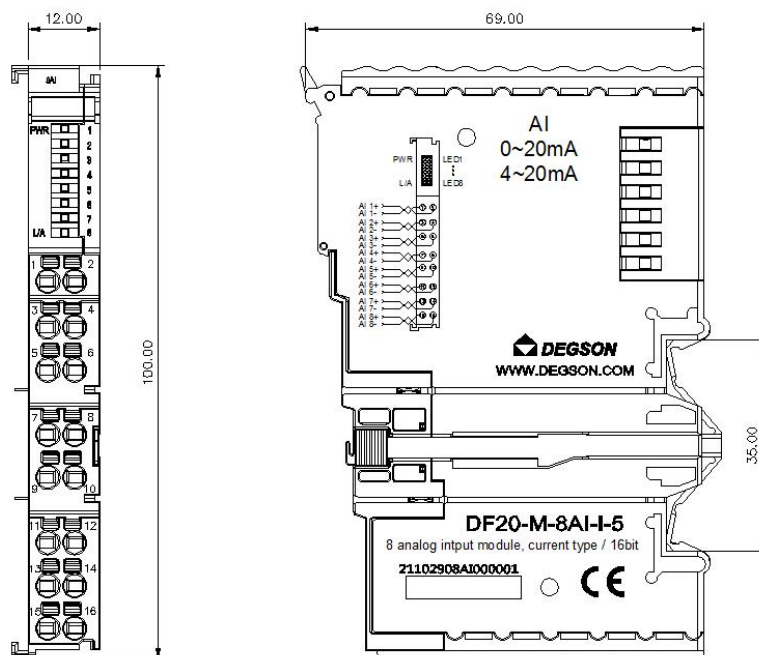
signal range	Current	decimal data	hexadecimal	Scope	transformational
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	value(I)		data		relationships
0 ~ 20 mA (0~65535)	>20 mA	65535	0xFFFF	overflow	
	20mA	65535	0xFFFF	Normal	$D = 65535 \times I / 20$
	10mA	32767	0x7FFF	range	$I = D \times 20 / 65535$
	0	0	0		
	<0mA	0	0	Underflow	
4 ~ 20 mA (0~65535)	>20 mA	65535	0xFFFF	overflow	
	20mA	65535	0xFFFF	Normal	$D = 65535 \times (I - 4) /$
	12mA	32767	0x7FFF	range	16
	4mA	0	0		$I = D \times 16 / 65535 + 4$
	<4mA	0	0	Underflow	
0 ~ 20 mA (0~27648)	>23.52 mA	32767	0x7FFF	overflow	
	23.52 mA	32511	0x7EFF	Upper limit value	$D = 27648 \times I / 20$
	20 mA	27648	0x6C00	Normal	$I = D \times 20 / 27648$
	10 mA	13824	0x3600	range	
	0 mA	0	0		
4 ~ 20 mA (0~27648)	>22.81 mA	32767	0x7FFF	overflow	$D = 27648 \times (I - 4) /$
	22.81 mA	32511	0x7EFF	Upper limit value	16
					$I = D \times 16 / 27648 + 4$

20 mA	27648	0x6C00	Normal range
12 mA	13824	0x3600	
4 mA	0	0	
			Lower limit
1.19 mA	-4864	0xED00	value
<1.19 mA	-32768	0x8000	Underflow

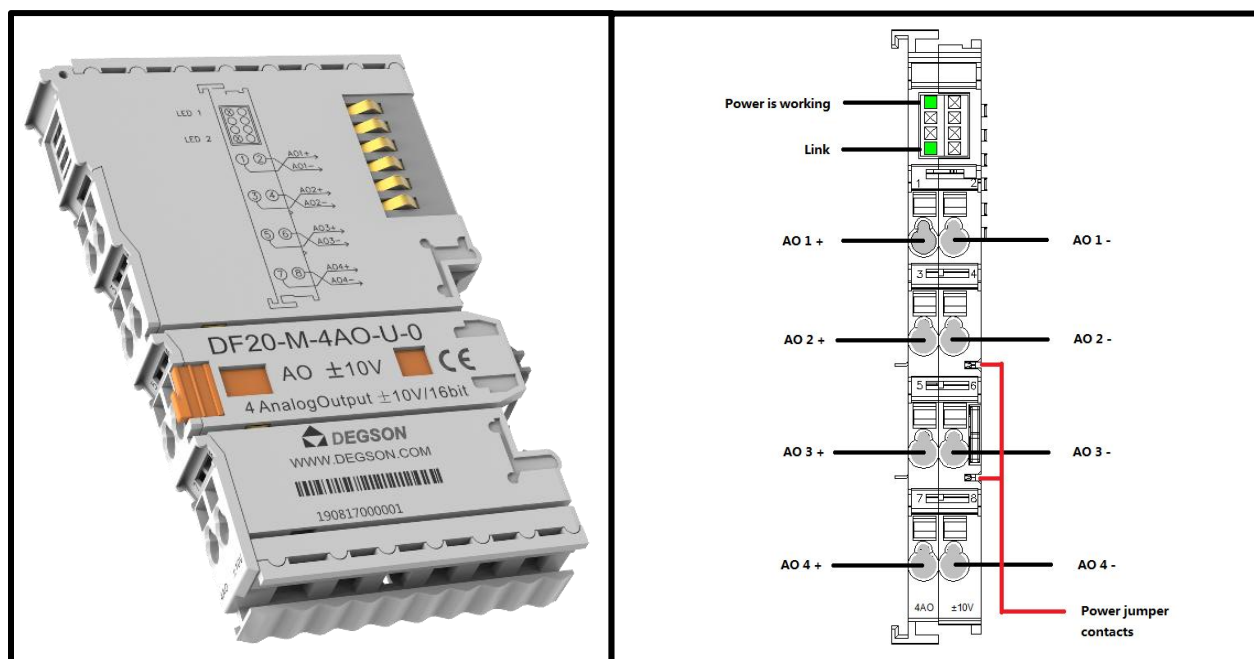
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/voltage type/± 10V (DF20-M-4AO-U-0)

- This analog output module can receive $\pm 10V$ standard signals.
- 4-channel analog output, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

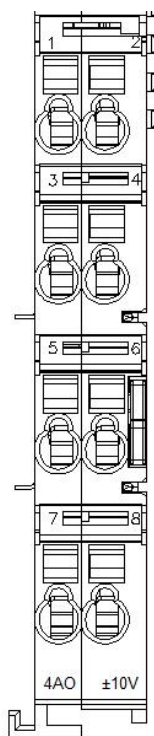


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Voltage type ($\pm 10V$)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<200mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(-10~10V)-27648~27648
Code value range (other buses)	(-10~10V)-32768~32767
temperature coefficient	<20ppm
Conversion time	$\leq 1ms$
load impedance	>2K Ω
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

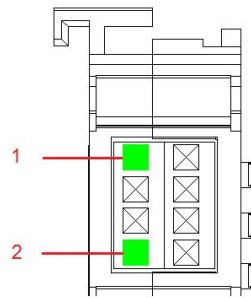
2. hardware interface

Wiring Terminal Definition



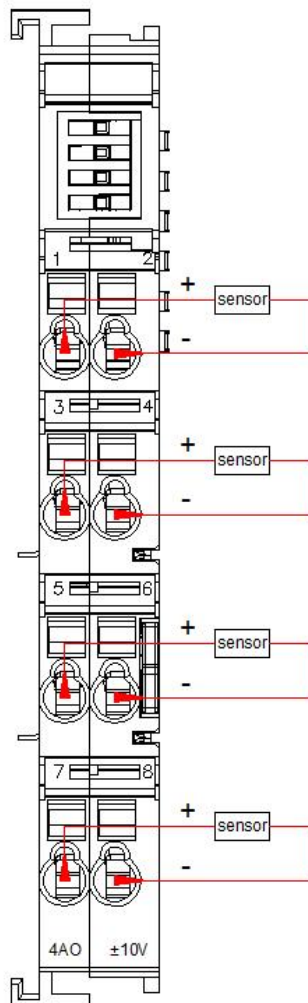
terminal serial number	Signal	Description
1	AO 1 positive electrode	Voltage output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Voltage output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Voltage output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Voltage output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog output module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

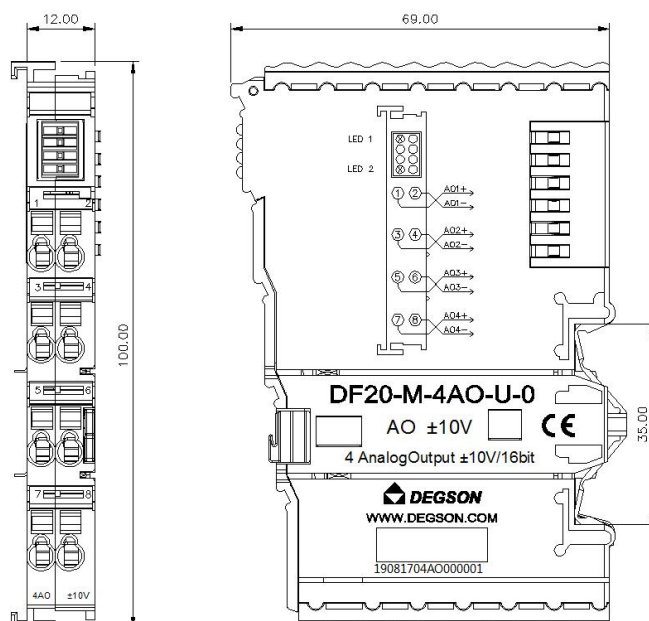
HoldReg	Byte	Format	Description	DF20-M-4AO-U-0_HoldRegBlock Size:4
0	IB0	Word	CH_0	
	IB1			
1	IB2	Word	CH_1	
	IB3			
2	IB4	Word	CH_2	
	IB5			
3	IB6	Word	CH_3	
	IB7			

- Process Data Definition Description.

signal range	decimal data	hexadecimal	Voltage	Scope	transformational
±10V	32767	0x7FFF	10V	Normal range	$D = 32767 \times U / 10$ $U = D \times 10 / 32767$
	0	0	0V		
	-32768	0x8000	-10V		

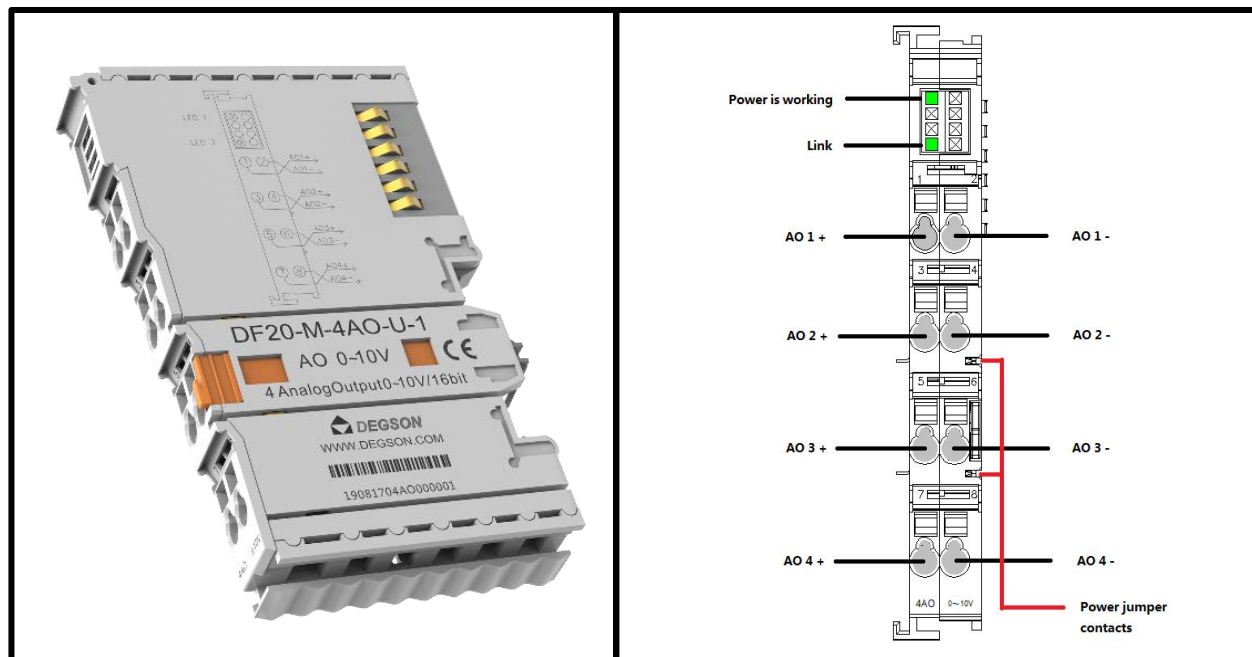
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/voltage type/0~10V (DF20-M-4AO-U-1)

- This analog output module can receive 0~10V standard signals.
- 4-channel analog output, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

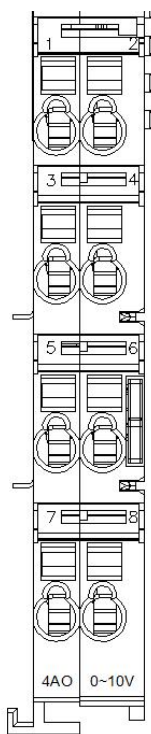


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Voltage type (0~10V)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<200mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~10V)0~27648
Code value range (other buses)	(0~10V)0~65535
temperature coefficient	<20ppm
Conversion time	≤1ms
load impedance	>2KΩ
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

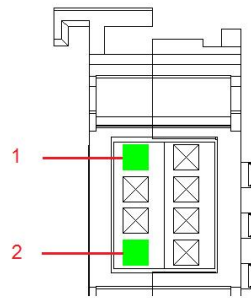
2. hardware interface

Wiring Terminal Definition



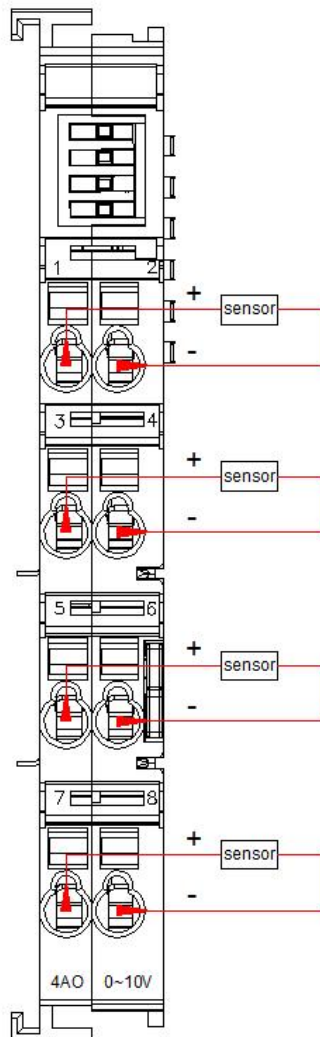
terminal serial number	Signal	Description
1	AO 1 positive electrode	Voltage output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Voltage output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Voltage output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Voltage output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

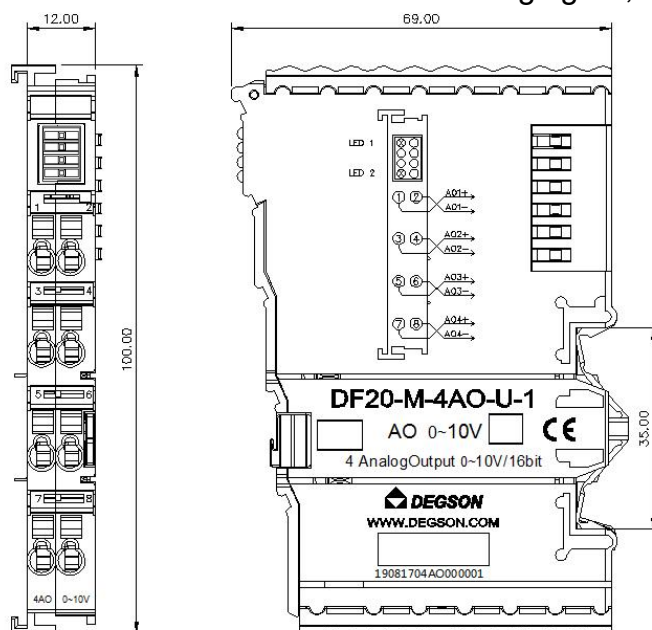
Output data: 4 Words	
Word 1	Set Value CH1: The first channel output data
Word 2	Set Value CH2: Second channel output data
Word 3	Set Value CH3: The third channel output data
Word 4	Set Value CH4: The fourth channel output data

➤ Process Data Definition Description.

signal range	decimal data	hexadecimal	Voltage	Scope	transformational
0~10V	65535	0xFFFF	10V	Normal range	$D = 65535 \times U / 10$ $U = D \times 10 / 65535$
	32767	0x7FFF	5V		
	0	0	0V		

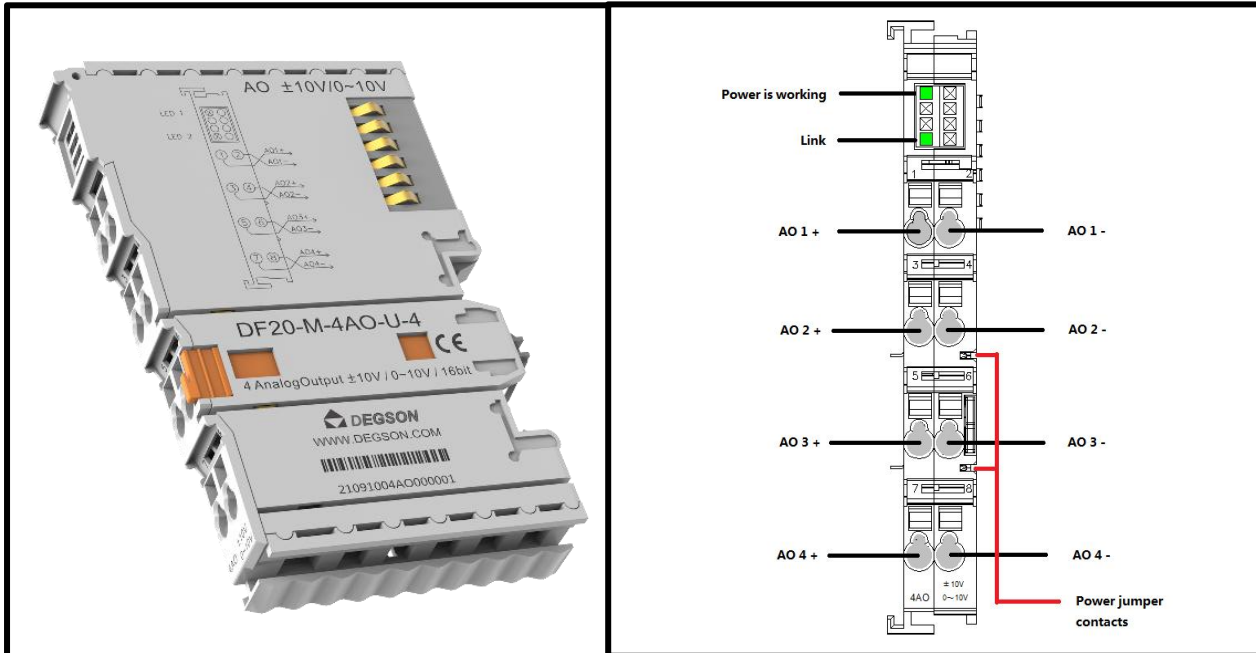
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/voltage type/ $\pm 10V$, 0~10V (DF20-M-4AO-U-4)

- This analog output module can receive $\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$ standard signals.
- 4-channel analog output, voltage type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

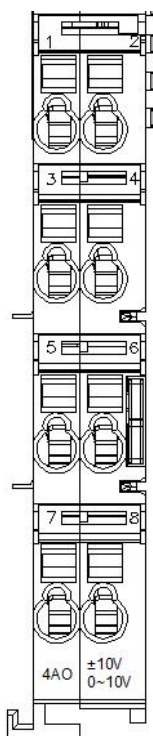


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Voltage type ($\pm 10V/0\sim 10V/2\sim 10V/\pm 5V/0\sim 5V/1\sim 5V$)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<200mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~10V) 0~27648 (-10V~10V) -27648~27648
Code value range (other buses)	(0~10V) 0~32767 (-10V~10V) -32768~32767
temperature coefficient	<20ppm
Conversion time	$\leq 1ms$
load impedance	>2K Ω
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

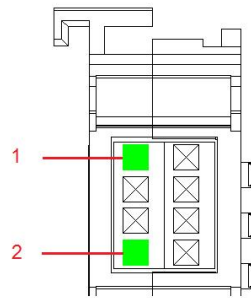
2. hardware interface

Wiring Terminal Definition



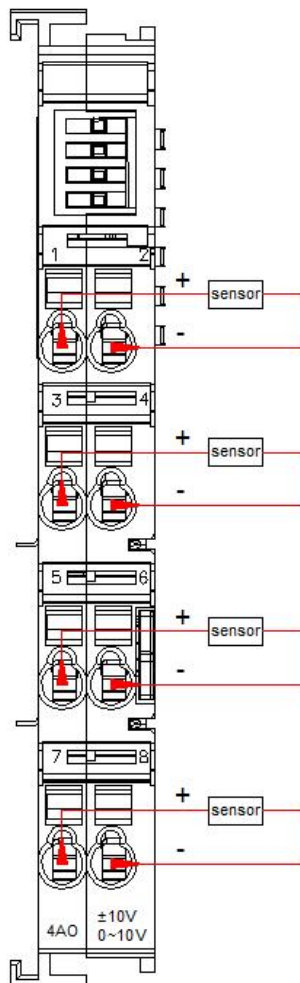
terminal serial number	Signal	Description
1	AO 1 positive electrode	Voltage output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Voltage output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Voltage output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Voltage output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog output module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4AO-U-4_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1\Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- process data definition statement

signal range	decimal data	hexadecimal data	Voltage value(U)	Scope note	transformational relationships
±10V (-32768~32767)	32767	0x7FFF	10V	Normal range	$D = 32767 \times U / 10$ $U = D \times 10 / 32767$
	0	0	0V		
	-32768	0x8000	-10V		
0~10V (0~32767)	32767	0x7FFF	10V	Normal range	$D = 32767 \times U / 10$ $U = D \times 10 / 32767$
	16384	0x4000	5V		
	0	0	0V		
2~10V (0~32767)	32767	0x7FFF	10V	Normal range	$D = 32767 \times (U - 2) / 8$ $U = D \times 8 / 32767 + 2$
	16384	0x4000	6V		
	0	0	2V		
±5V (-32768~32767)	32767	0x7FFF	5V	Normal range	$D = 32767 \times U / 5$ $U = D \times 5 / 32767$
	0	0x0000	0V		
	-32768	0x8000	-5V		
0~5V (0~32767)	32767	0x7FFF	5V	Normal range	$D = 32767 \times U / 5$ $U = D \times 5 / 32767$
	16384	0x4000	2.5V		
	0	0	0V		
1~5V	32767	0x7FFF	5V	Normal range	$D = 32767 \times (U - 1) / 4$

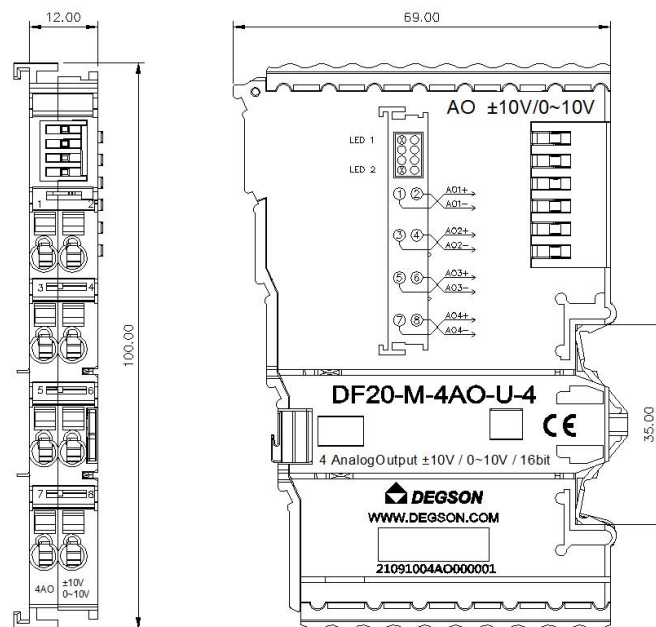
	16384	0x4000	3V		
	0	0	1V		

signal range	decimal	hexadecimal	Voltage	Scope note	transformational
±10V （-27648~27648）	>32511	>0x7EFF	0V	overflow	D = 27648 x U / 10 U = D x 10 / 27648
	32511	0x7EFF	11.76V	Upper limit	
	27648	0x6C00	10V	Normal range	
	13824	0x3600	5V		
	0	0x0000	0V		
	-13824	0xCA00	-5V		
	-27648	0x9400	-10V		
	-32511	0x8100	-11.76V	Lower limit	
	<-32511	<0x8100	0V	Underflow	
0~10V (0~27648)	>32511	>0x7EFF	0V	overflow	D = 27648 x U / 10 U = D x 10 / 27648
	32511	0x7EFF	11.76V	Upper limit	
	27648	0x6C00	10V	Normal range	
	13824	0x3600	5V		
	0	0x0000	0V		
	>32511	>0x7EFF	0V	overflow	D = 27648 x (U – 2) / 8 U = D x 8 / 27648 + 2
2~10V (0~27648)	32511	0x7EFF	11.41V	Upper limit	
	27648	0x6C00	10V	Normal range	
	13824	0x3600	6V		
	0	0x0000	2V		
	-4864	0xED00	0.59 V	Lower limit	
<-4864	<0xED00	0V	Underflow		

±5V (-27648~27648)	>32511	>0x7EFF	0V	overflow	D = 27648 x U / 5 U = D x 5 / 27648
	32511	0x7EFF	5.88V	Upper limit	
	27648	0x6C00	5V	Normal range	
	13824	0x3600	2.5V		
	0	0x0000	0V		
	-13824	0xCA00	-2.5V		
	-27648	0x9400	-5V		
	-32511	0x8100	-5.88V	Lower limit	
	<-32511	<0x8100	0V	Underflow	
0-5V (0~27648)	>32511	>0x7EFF	0V	overflow	D = 27648 x U / 5 U = D x 5 / 27648
	32511	0x7EFF	5.88V	Upper limit	
	27648	0x6C00	5V	Normal range	
	13824	0x3600	2.5V		
	0	0x0000	0V		
1~5V (0~27648)	>32511	>0x7EFF	0V	overflow	D = 27648 x (U – 1) / 4 U = D x 4 / 27648 + 1
	32511	0x7EFF	5.7V	Upper limit	
	27648	0x6C00	5V	Normal range	
	13824	0x3600	3V		
	0	0x0000	1V		
	-4864	0xED00	0.3V	Lower limit	
	<-4864	<0xED00	0V	Underflow	

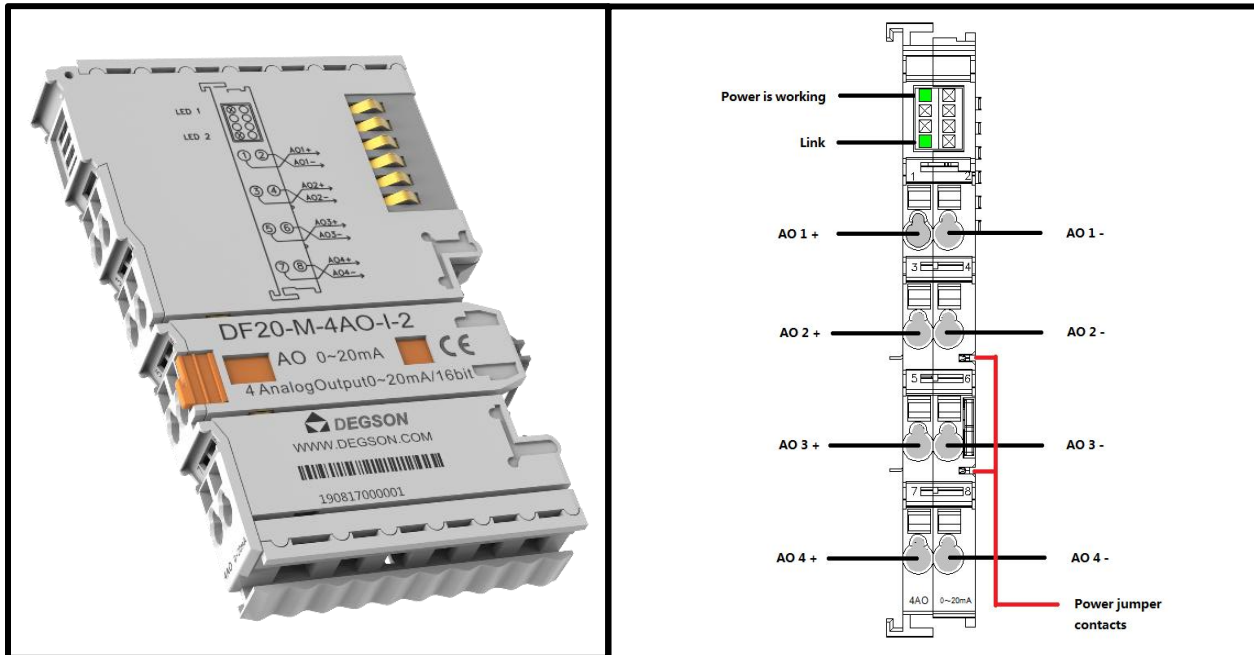
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/current mode/0-20mA (DF20-M-4AO-I-2)

- This analog output module can receive 0~20mA standard signals.
- 4-channel analog output, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

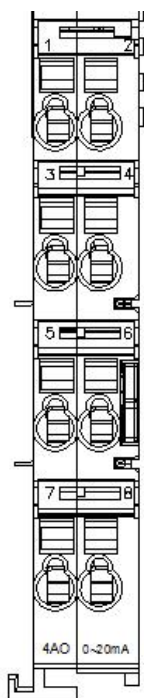


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Current type (0~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<400mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~20mA)0~27648
Code value range (other buses)	(0~20mA)0~65535
temperature coefficient	<20ppm
Conversion time	≤1ms
load impedance	<250Ω
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

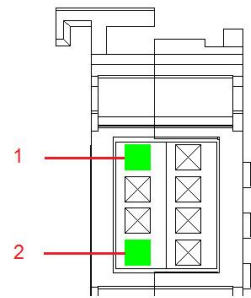
2. hardware interface

Wiring Terminal Definition



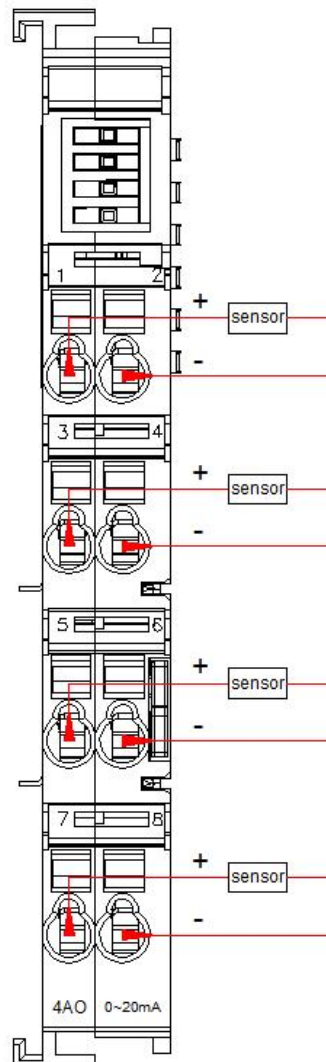
terminal serial number	Signal	Description
1	AO 1 positive electrode	Current output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Current output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Current output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Current output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel voltage type analog output module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

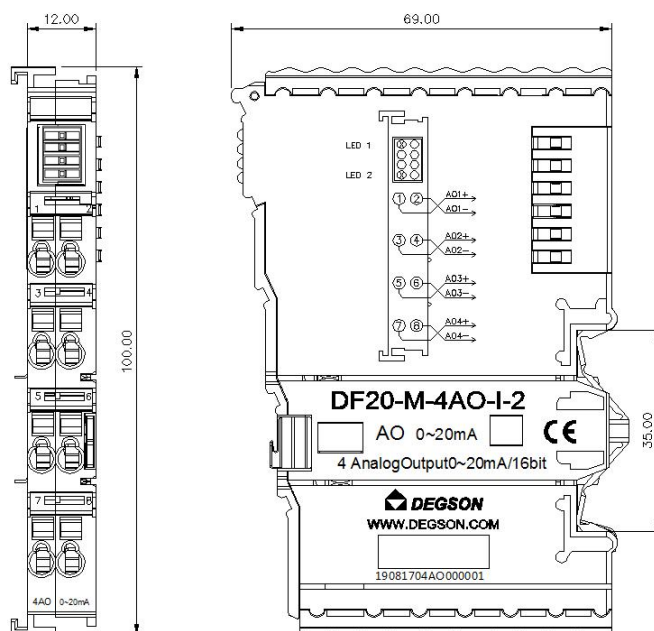
HoldReg	Byte	Format	Description	DF20-M-4AO-I-2_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- process data definition statement

signal range	decimal data	hexadecimal data	Current value(I)	Scope	transformational relationships
0 ~ 20 mA	65535	0xFFFF	20mA	Normal range	$D = 65535 \times I / 20$ $I = D \times 20 / 65535$
	32767	0x7FFF	10mA		
	0	0	0		

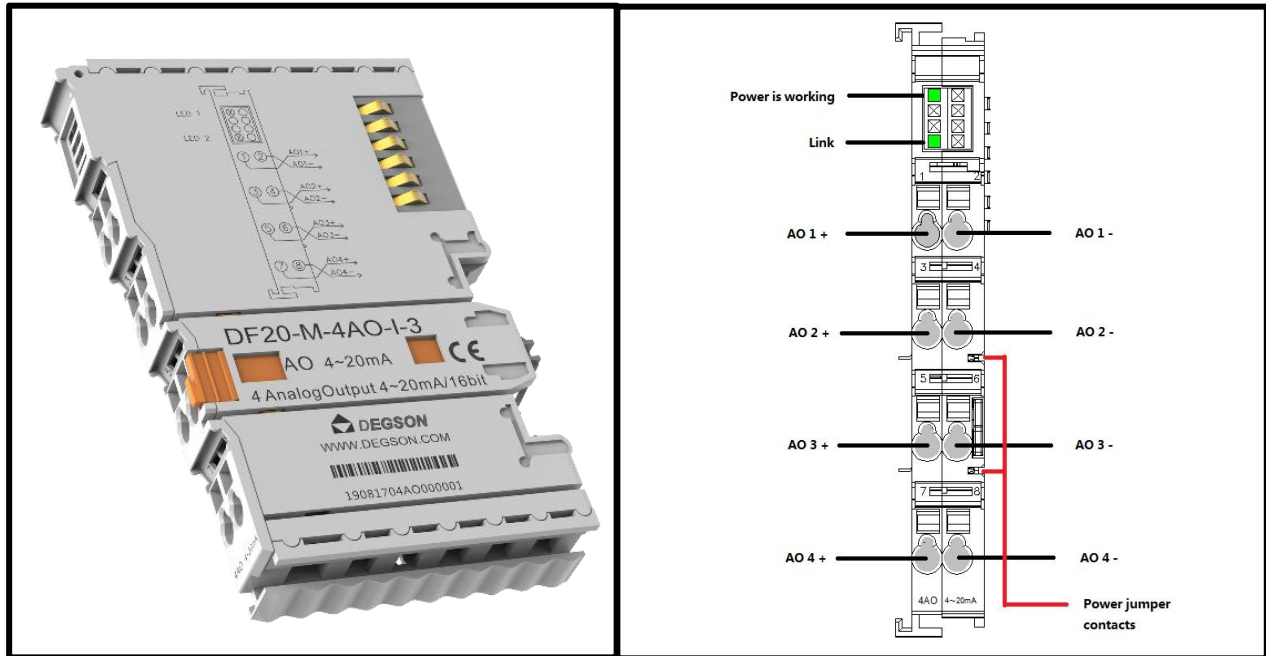
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/current mode/4-20mA (DF20-M-4AO-I-3)

- This analog output module can receive 4~20mA standard signals.
- 4-channel analog output, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

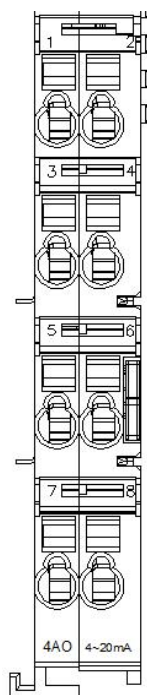


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Current type (4~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<400mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(4~20mA)0~27648
Code value range (other buses)	(4~20mA)0~65535
temperature coefficient	<20ppm
Conversion time	≤1ms
load impedance	<250Ω
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

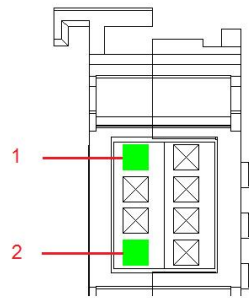
2. hardware interface

Wiring Terminal Definition



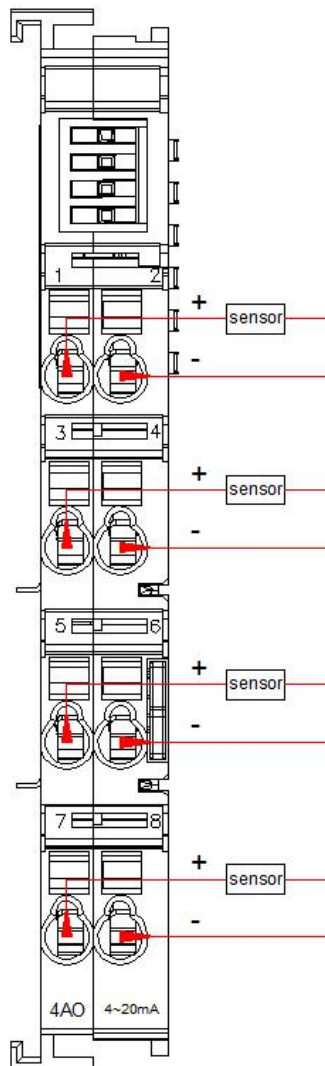
terminal serial number	Signal	Description
1	AO 1 positive electrode	Current output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Current output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Current output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Current output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel current type analog output module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

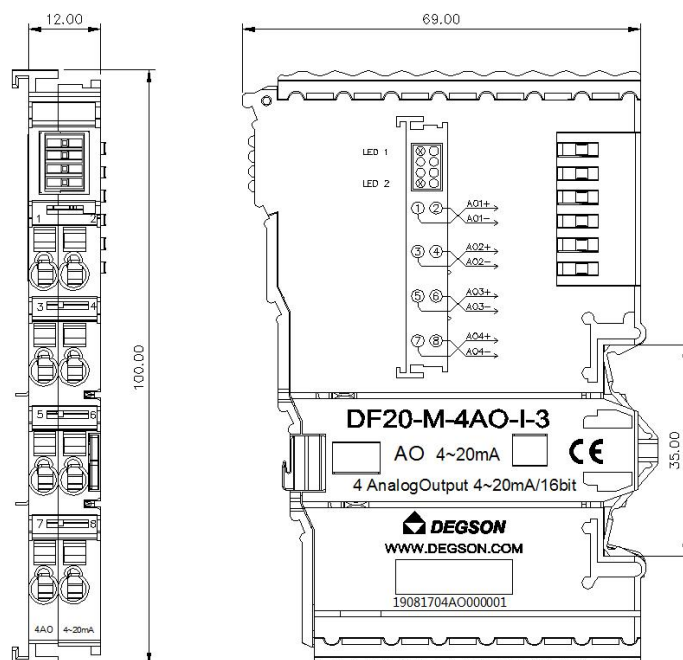
HoldReg	Byte	Format	Description	DF20-M-4AO-I-3_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

- process data definition statement

signal range	decimal data	hexadecimal data	Current value(I)	Scope	transformational relationships
4 ~ 20 mA	65535	0xFFFF	20mA	Normal range	$D = 65535 \times (I - 4) /$
	32767	0x7FFF	12mA		16
	0	0	4mA		$I = D \times 16 / 65535 + 4$

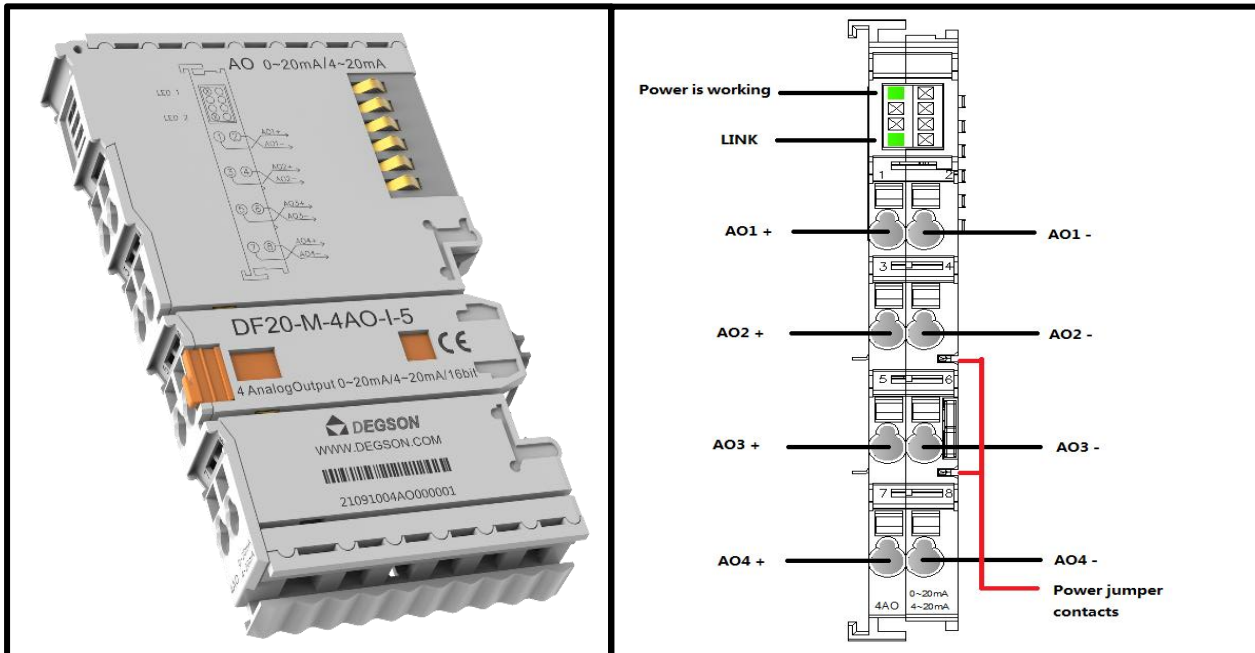
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel analog output/current type/0~20mA, 4~20mA (DF20-M-4AO-I-5)

- This analog output module can receive 0~20mA, 4~20mA standard signals.
- 4-channel analog output, current type.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

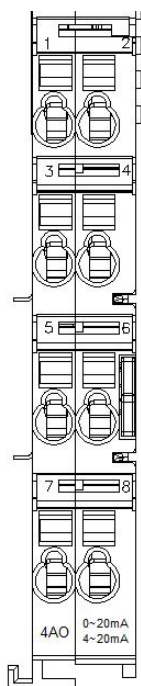


1. Specification parameters

technical information	
Number of channels	4
signal type	Differential
input signal voltage	24VDC
Enter the connection type	2-Line
Resolution	16 Bit
Precision	0.10%
data size	8 Byte
Measuring range	Current type (0~20mA/4~20mA)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<400mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
Code value range (Profinet/Ethernet IP)	(0~20mA/4~20mA)0~27648
Code value range (other buses)	(0~20mA/4~20mA)0~65535
temperature coefficient	<20ppm
Conversion time	≤1ms
load impedance	<250Ω
misdiagnosis	Yes
overcurrent protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

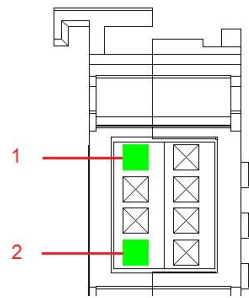
2. hardware interface

Wiring Terminal Definition



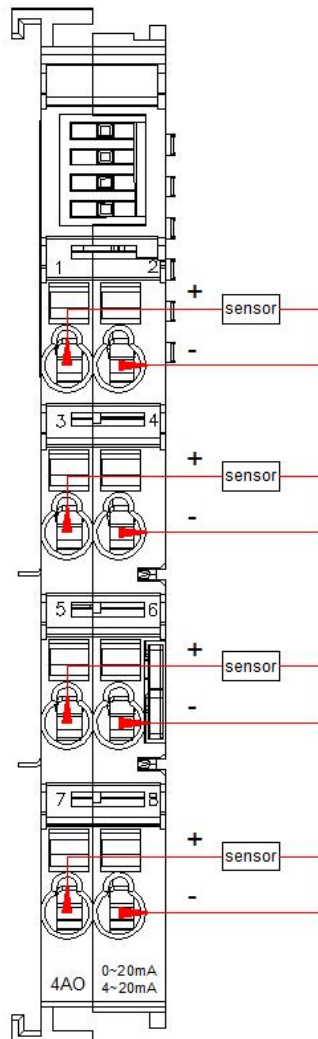
terminal serial number	Signal	Description
1	AO 1 positive electrode	Current output channel 1
2	AO 1 negative pole	
3	AO 2 positive electrode	Current output channel 2
4	AO 2 negative pole	
5	AO 3 positive electrode	Current output channel 3
6	AO 3 negative pole	
7	AO 4 positive electrode	Current output channel 4
8	AO 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



3. process data definitions

- 4-channel current type analog output module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4AO-I-5_HoldRegBlock Size:4
0	IB0	1Word	CH_0	
	IB1			
1	IB2	1Word	CH_1	
	IB3			
2	IB4	1Word	CH_2	
	IB5			
3	IB6	1Word	CH_3	
	IB7			

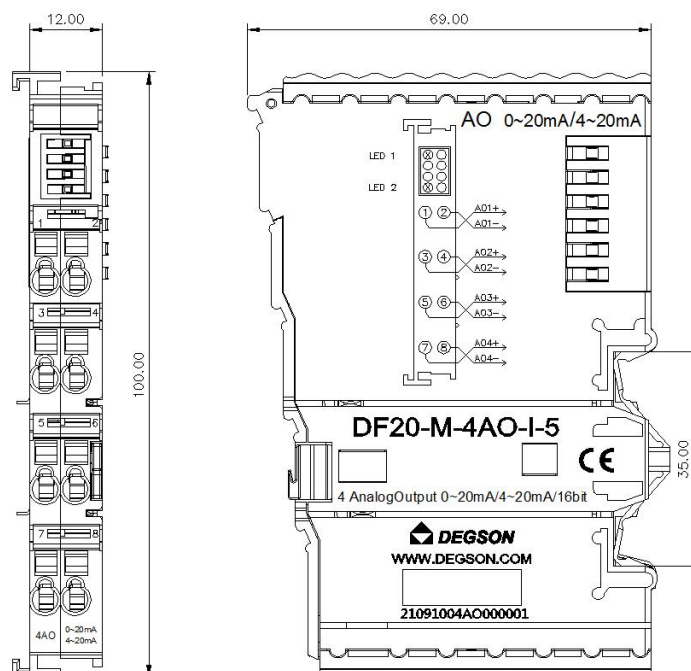
- process data definition statement

signal range	decimal data	hexadecimal data	Current value(I)	Scope	transformational relationships
0 ~ 20 mA (0~65535)	65535	0xFFFF	20mA	Normal range	D = 65535 x I / 20 I = D x 20 / 65535
	32767	0x7FFF	10mA		
	0	0	0		
4 ~ 20 mA (0~65535)	65535	0xFFFF	20mA	Normal range	D = 65535 x (I – 4) / 16 I= D x 16 / 65535 + 4
	32767	0x7FFF	12mA		
	0	0	4mA		
0 ~ 20 mA Note 1 (0~27648)	>32511	>0x7EFF	0 mA	overflow	D = 27648 x I / 20 I = D x 20 / 27648
	32511	0x7EFF	23.52 mA	Upper limit value	
	27648	0x6C00	20 mA	Normal range	
	13824	0x3600	10 mA		

	0	0	0 mA		
	>32511	>0x7EFF	0 mA	overflow	
	32511	0x7EFF	22.81 mA	Upper limit value	
4 ~ 20 mA (0~27648)	27648	0x6C00	20 mA	Normal range	$D = 27648 \times (I - 4) / 16$ $I = D \times 16 / 27648 + 4$
	13824	0x3600	12 mA		
	0	0	4 mA		
	-4864	0xED00	1.19 mA	Lower limit value	
	<-4864	<0xED00	0 mA	Underflow	

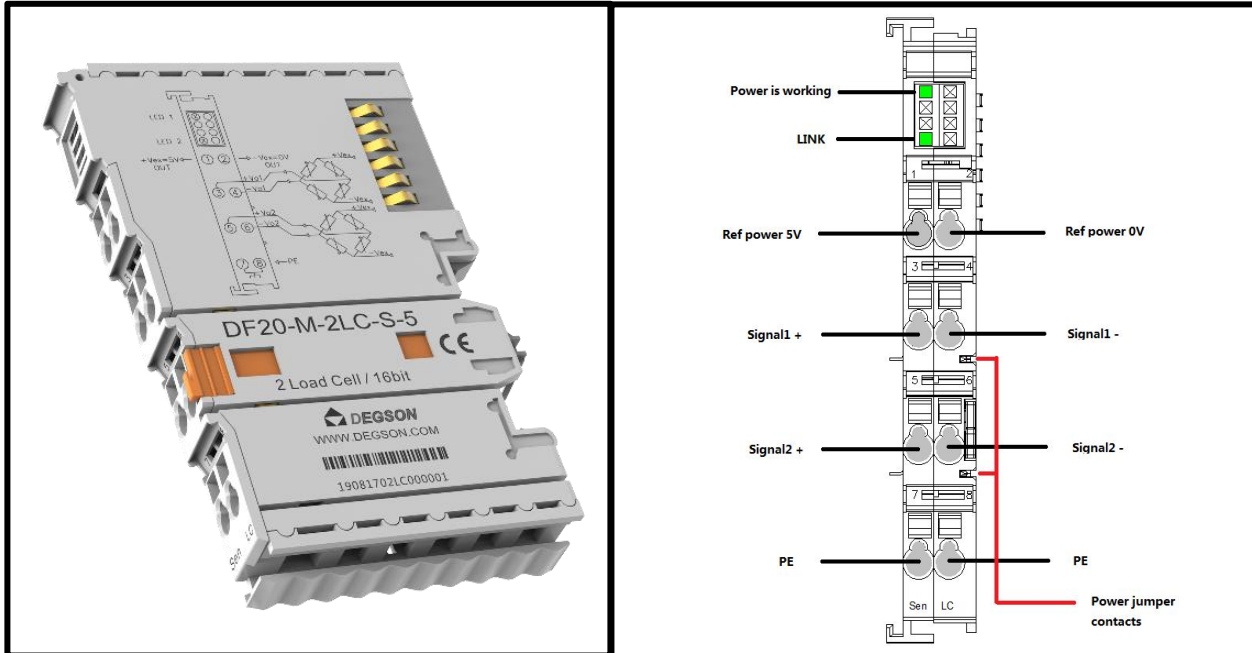
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



2-channel pressure measurement/0~10mV (DF20-M-2LC-S-5)

- The pressure measurement module has a measurement range of 0~10mV.
- 2-channel pressure measurement.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

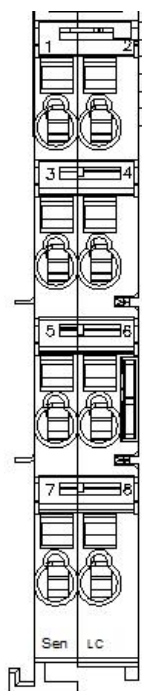


1. Specification parameters

technical information	
Number of channels	2
signal type	Bridge, pressure transducer
Enter the connection type	4-wire
Resolution	16 Bit
Precision	0.20%
data size	8 Byte
Measuring range	0~10mV (0~32767)
Supply voltage (system)	5VDC; Through data contact
Power consumption	<210mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
frequency interference suppression	10Hz 50Hz 60Hz 400Hz
Conversion time	3.3ms
internal resistance	>500K Ω
misdiagnosis	Yes
Diagnosis	parameter assignment error
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

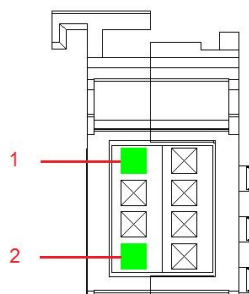
2. hardware interface

Wiring Terminal Definition



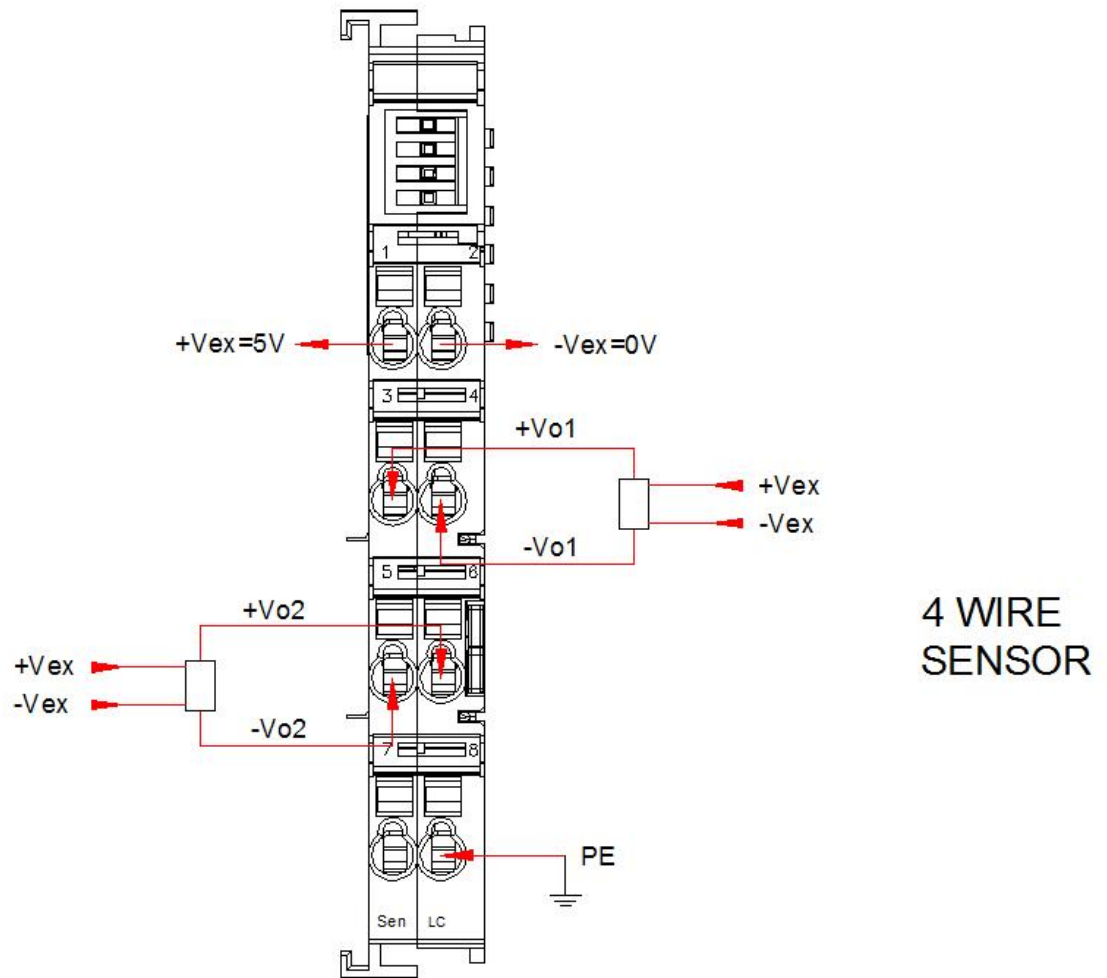
terminal serial number	Signal	Description
1	Ref power 5V	supplying voltage to bridges, sensors
2	Ref power 0V	
3	Signal 1 positive pole	Measurement channel 1
4	Signal 1 negative pole	
5	Signal 2 positive pole	Measurement channel 2
6	Signal 2 negative pole	
7	PE	module grounding
8	PE	

LED indicator definition



LED indicator light	State	Meaning
1	The green light is always on	The power supply is functioning properly
	Green light out	The power supply is operating abnormally
2	Green light blinking	The communication between the coupler and the module is normal
	Green light out	Abnormal communication between

Wirina Diagram



3. process data definitions

- 2-channel pressure sensing module, occupying 2 holding registers.
- Holding Register Block Data Structure Definition.

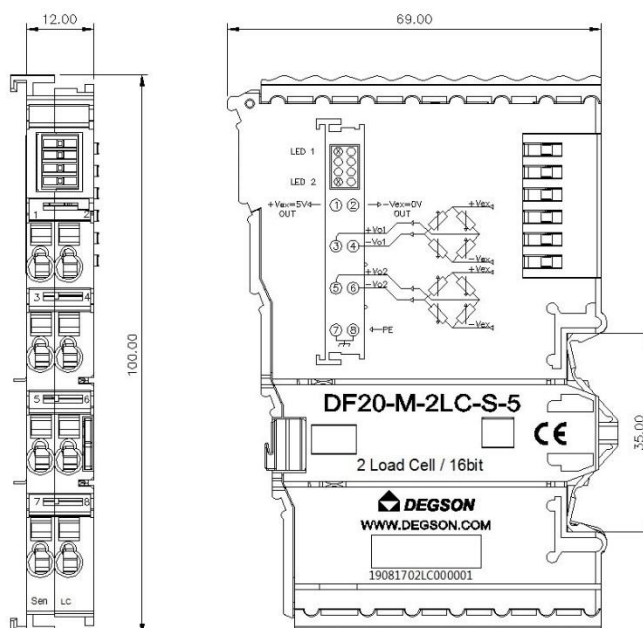
HoldReg	Byte	Format	Description	DF20-M-2LC-S-5_HoldRegBlock Size:2
0	IB0	1Word	LC0	
	IB1			
1	IB2	1Word	LC1	
	IB3			
	IB7			

- process data definition statement

signal range	decimal data	hexadecimal data	Voltage value(U)	transformational relationships
0~10mV	32767	0x7FFF	10 mV	$D = 32767 \times U / 10$ $U = D \times 10 / 32767$
	16383	0x3FFF	5 mV	
	0	0x0000	0 mV	

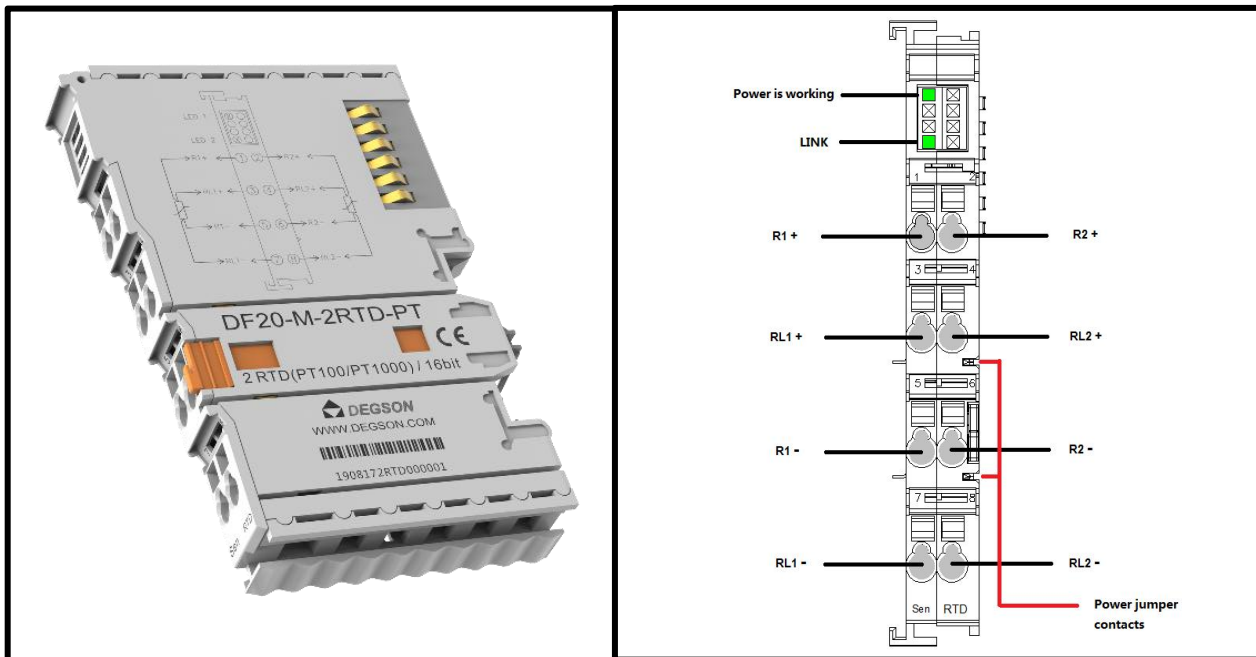
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



2-channel thermal resistance measurement (DF20-M-2RTD-PT)

- The module utilizes 2-channel RTD measurement and supports 13 types of conventional RTDs.
- Supports two-way sensors.
- Supports 2-wire, 3-wire, and 4-wire sensors.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

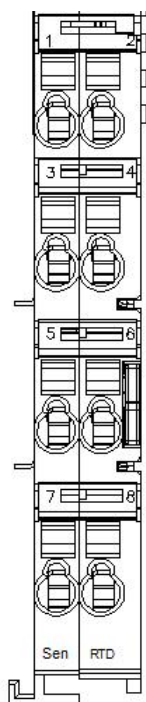


1. Specification parameters

technical information	
Number of channels	2
Sensor type	RTDs
signal type	PT100、PT200、PT500、PT1000、NI100、NI200、NI500、NI1000、NI120、CU10、CU50、CU100、CU53、KTY84
Enter the connection type	2/3/4-wire
Resolution	16 Bit,0.1℃/per digit
Precision	±0.3%
data size	4 Byte
temperature error	±50ppm/Kmax.
Measuring range	-200℃~850℃
Supply voltage (system)	5VDC; Through data contact
Power consumption	<60mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
frequency interference suppression	10Hz 50Hz 60Hz 400Hz
Conversion time	150ms
misdiagnosis	Yes
Diagnosis	disconnection/parameter assignment error
process alarms	upper/lower limit per channel
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

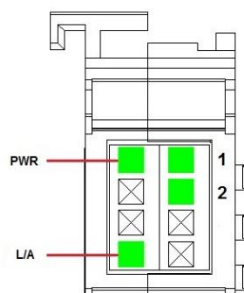
2. hardware interface

Wiring Terminal Definition



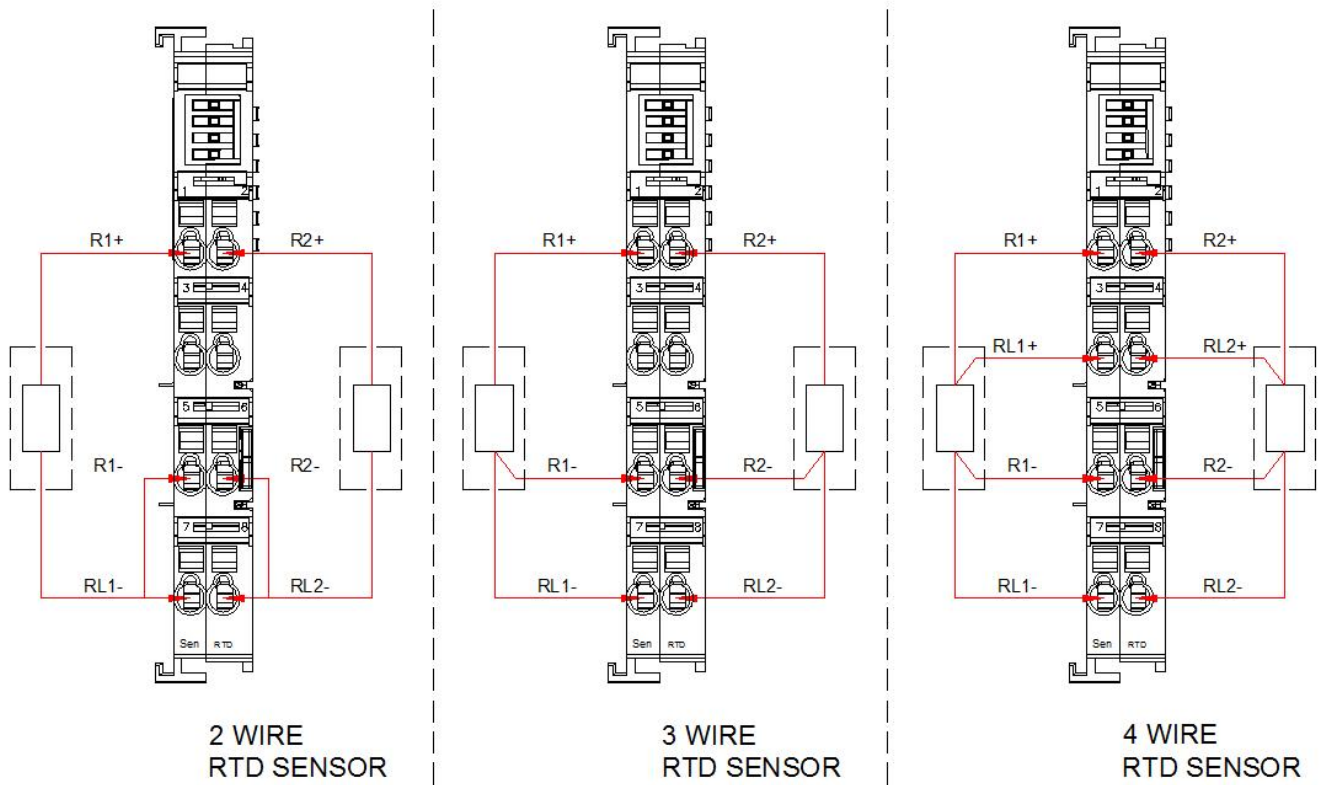
terminal serial number	Signal	Description
1	excitation power supply positive	Signal input channel 1
3	Signal positive	
5	Exciting the negative terminal of the power supply, the	
7	Signal negative	
2	excitation power supply positive	Signal input channel 2
4	Signal positive	
6	Exciting the negative terminal of the power supply, the	
8	Signal negative	

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		Module power supply and initialization are normal
	Green light out		Abnormal module power supply and initialization
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	Green light blinking		Module channel 1 is sampled normally
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
2	Green light blinking		Module channel 2 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect

Wiring Diagram



As shown in the picture.

Take the connection method of one channel on the module as an example, the connection method of the remaining channels is the same

- (1) 4-wire sensor to connect 1, 3, 5, 7 were connected to the sensor's excitation power supply +, signal +, excitation power supply -, signal -;
- (2) 3-wire sensors connected to 1, 5, 7.
- (3) 2-wire sensor connected to 1 and 5 (where 5 is shorted to 7).

Remarks.

The excitation power supply + and signal + of the RTD sensor are usually two red wires, and their functions are not distinguished and can be mixed;

Excitation power supply -, signal - usually two blue wires, or 1 blue and 1 black, do not distinguish between functions, can be mixed.

3. process data definitions

DF20-M-2RTD-PT module process data definition

- 2-channel RTD measurement module, occupying 2 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-2RTD-PT_HoldRegBlock Size:2
0	IB0	1Word	RTD0	
	IB1			
1	IB2	1Word	RTD1	
	IB3			

- Description of various sensor process data definitions

PT100 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

PT200 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range

-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

PT500 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

PT1000 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow

Unconnected sensor	-32768	0x8000	Disconnect detection
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Ni100 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni120 type			
Temperature	Decimal	Hexadecimal	Scope note
>309	32767	0x7FFF	overflow
309	3090	0x0C12	Normal range
-79	-790	0xFCEA	
<-79	-32767	0x8001	Underflow
Unconnected	-32768	0x8000	Disconnect

sensor			detection
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NI200 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni500 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni1000 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu10 type			
Temperature	Decimal	Hexadecimal	Scope note
>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu50 type			
Temperature	Decimal	Hexadecimal	Scope note

>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu53 type			
Temperature	Decimal	Hexadecimal	Scope note
>150	32767	0x7FFF	overflow
150	1500	0x05DC	Normal range
-50	-500	0xFE0C	
<-50	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu100 type			
Temperature	Decimal	Hexadecimal	Scope note
>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range

-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

KTY84_130 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

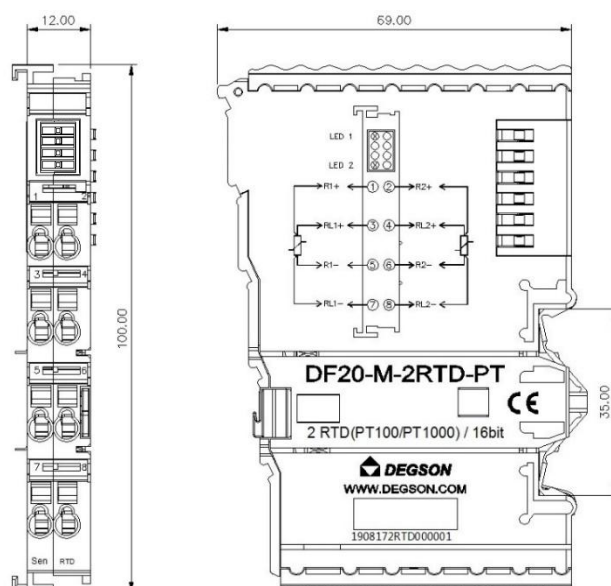
KTY84_150 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow

Unconnected sensor	-32768	0x8000	Disconnect detection
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KTY84_151 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

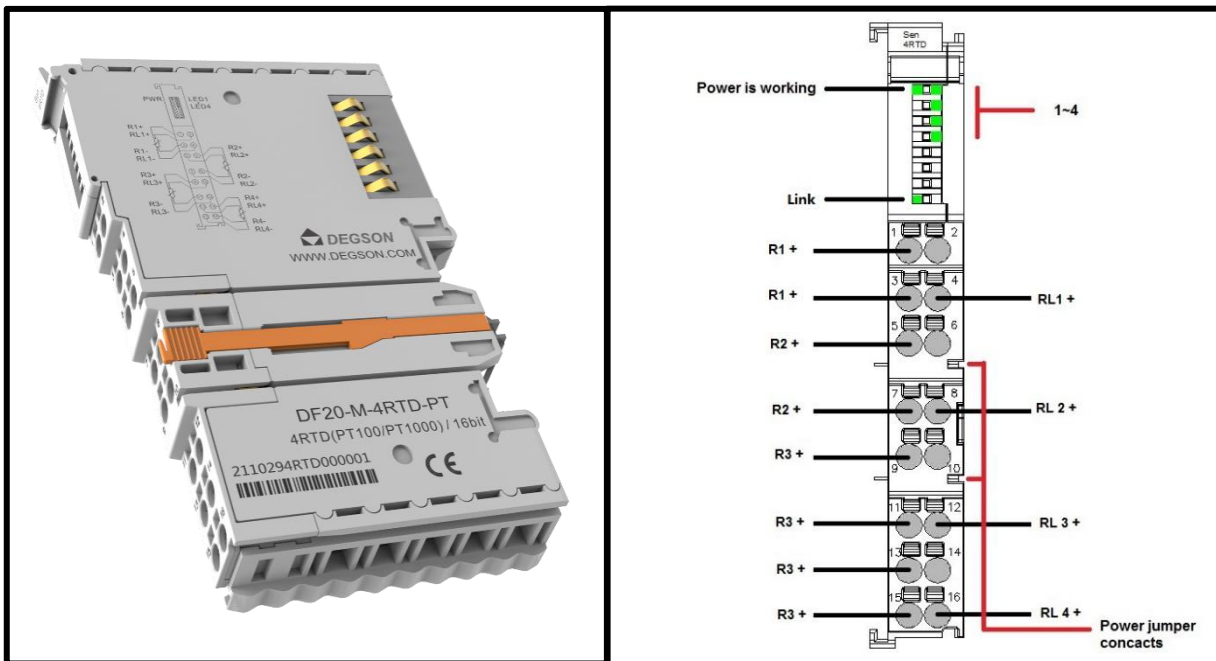
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel thermal resistance measurement (DF20-M-4RTD-PT)

- The module utilizes 4-channel RTD measurement and supports 13 types of conventional RTDs.
- Supports four-way sensors.
- Supports 2-wire and 3-wire sensors.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

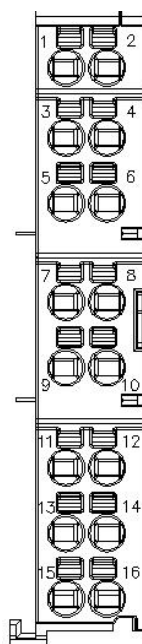


1. Specification parameters

technical information	
Number of channels	4
Sensor type	RTDs
signal type	PT100、PT200、PT500、PT1000、NI100、NI200、NI500、NI1000、NI120、CU10、CU50、CU100、CU53、KTY84
Enter the connection type	2/3-wire
Resolution	16 Bit,0.1℃/per digit
Precision	±0.3%
data size	8 Byte
temperature error	±50ppm/Kmax.
Measuring range	-200℃~850℃
Supply voltage (system)	5VDC; Through data contact
Power consumption	<100mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
frequency interference suppression	10Hz 50Hz 60Hz 400Hz
Conversion time	200ms
misdiagnosis	Yes
Diagnosis	disconnection/parameter assignment error
process alarms	upper/lower limit per channel
reverse circuit protection	Yes
Indicator light	6x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

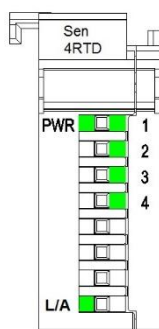
2. hardware interface

Wiring Terminal Definition



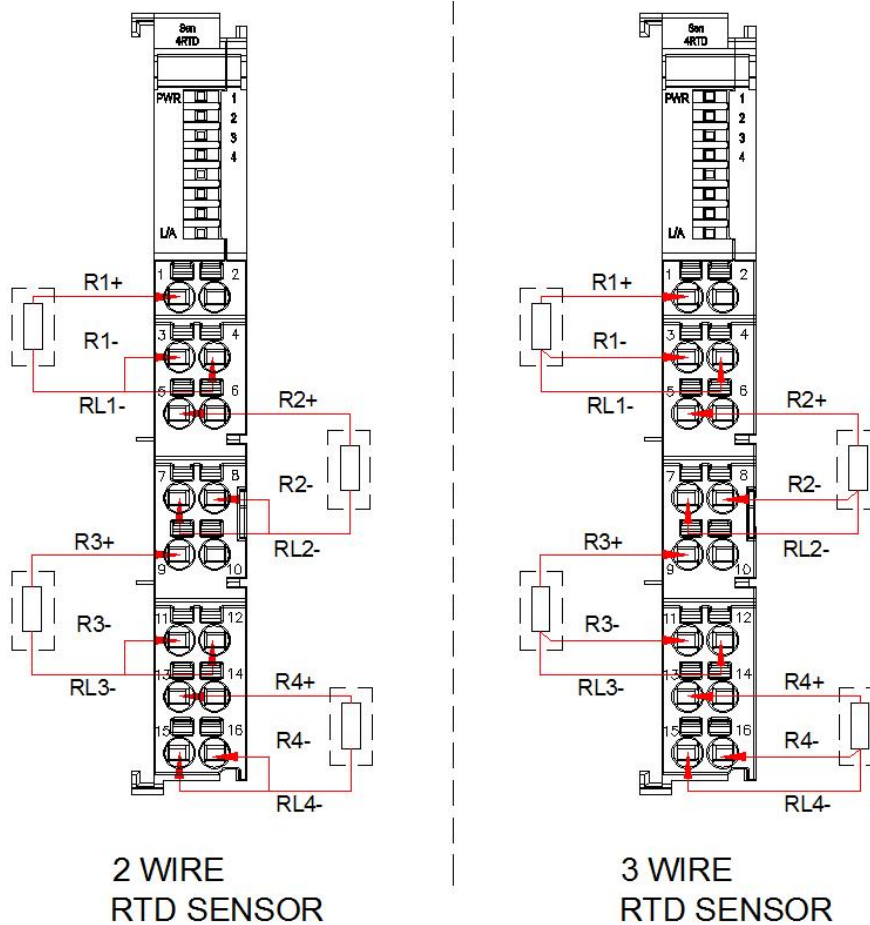
terminal serial number		Signal		Description
1	2	excitation power supply positive	/	Signal input channel 1
3	4	Exciting the negative terminal of the power supply, the	Signal negative	
5	6	excitation power supply positive	/	Signal input channel 2
7	8	Exciting the negative terminal of the power supply, the	Signal negative	
9	10	excitation power supply positive	/	Signal input channel 3
11	12	Exciting the negative terminal of the power supply, the	Signal negative	
13	14	excitation power supply positive	/	Signal input channel 4
15	16	Exciting the negative terminal of the power supply, the	Signal negative	

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		Module power supply and initialization are normal
	Green light out		Abnormal module power supply and initialization
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	Green light blinking		Module channel 1 is sampled normally
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
2	Green light blinking		Module channel 2 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
3	Green light blinking		Module channel 3 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
4	Green light blinking		Module channel 4 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect

Wiring Diagram



As shown in the picture.

Take the connection method of one channel on the module as an example, the connection method of the remaining channels is the same

(2) 3-wire sensors connected to 1, 3, 4.

(3) 2-wire sensor connected to 1 and 3 (where 3 and 4 are shorted).

Remarks.

The excitation power supply + and signal + of the RTD sensor are usually two red wires, and their functions are not distinguished and can be mixed;

Excitation power supply -, signal - usually two blue wires, or 1 blue and 1 black, do not distinguish between functions, can be mixed.

3. process data definitions

- 4-channel RTD measurement module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4RTD-PT_HoldRegBlock Size:4
0	IB0	1Word	RTD0	
	IB1			
1	IB2	1Word	RTD1	
	IB3			
2	IB4	1Word	RTD2	
	IB5			
3	IB6	1Word	RTD3	
	IB7			

- Description of various sensor process data definitions

PT100 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

PT200 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	

<-200	-32767	0x8001	Underflow
Disconnected sensor	-32768	0x8000	Disconnect detection

PT500 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Disconnected sensor	-32768	0x8000	Disconnect detection

PT1000 type			
Temperature	Decimal	Hexadecimal	Scope note
>850	32767	0x7FFF	overflow
850	8500	0x2134	Normal range
-200	-2000	0xF830	
<-200	-32767	0x8001	Underflow
Disconnected	-32768	0x8000	Disconnect

sensor			detection
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Ni100 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni120 type			
Temperature	Decimal	Hexadecimal	Scope note
>309	32767	0x7FFF	overflow
309	3090	0x0C12	Normal range
-79	-790	0xFCEA	
<-79	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

NI200 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni500 type			
Temperature	Decimal	Hexadecimal	Scope note
>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Ni1000 type			
Temperature	Decimal	Hexadecimal	Scope note

>250	32767	0x7FFF	overflow
250	2500	0x09C4	Normal range
-60	-600	0xFDA8	
<-60	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu10 type			
Temperature	Decimal	Hexadecimal	Scope note
>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu50 type			
Temperature	Decimal	Hexadecimal	Scope note
>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range

-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu53 type			
Temperature	Decimal	Hexadecimal	Scope note
>150	32767	0x7FFF	overflow
150	1500	0x05DC	Normal range
-50	-500	0xFE0C	
<-50	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

Cu100 type			
Temperature	Decimal	Hexadecimal	Scope note
>159	32767	0x7FFF	overflow
159	1590	0x0636	Normal range
-59	-590	0xFDB2	
<-59	-32767	0x8001	Underflow

Unconnected sensor	-32768	0x8000	Disconnect detection
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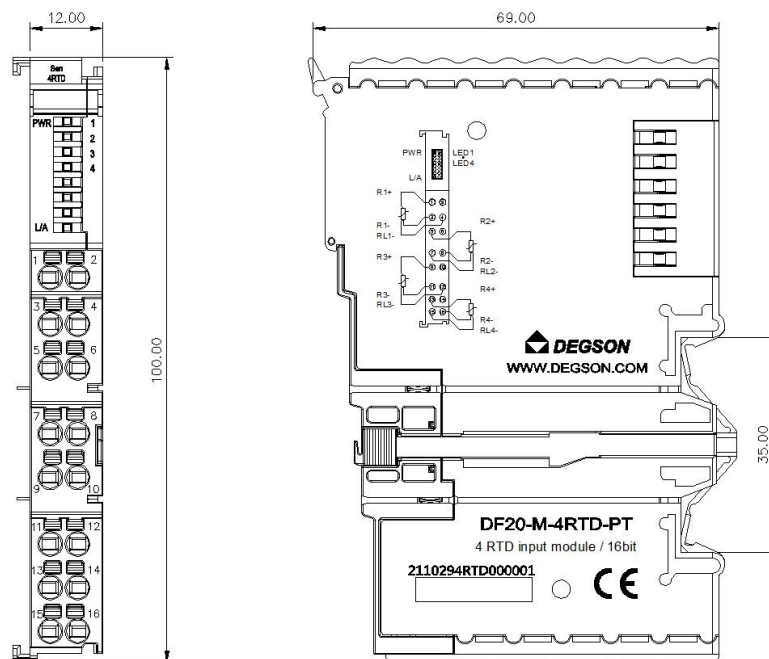
KTY84_130 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

KTY84_150 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

KTY84_151 type			
Temperature	Decimal	Hexadecimal	Scope note
>280	32767	0x7FFF	overflow
280	2800	0x0AF0	Normal range
-40	-400	0xFE70	
<-40	-32767	0x8001	Underflow
Unconnected sensor	-32768	0x8000	Disconnect detection

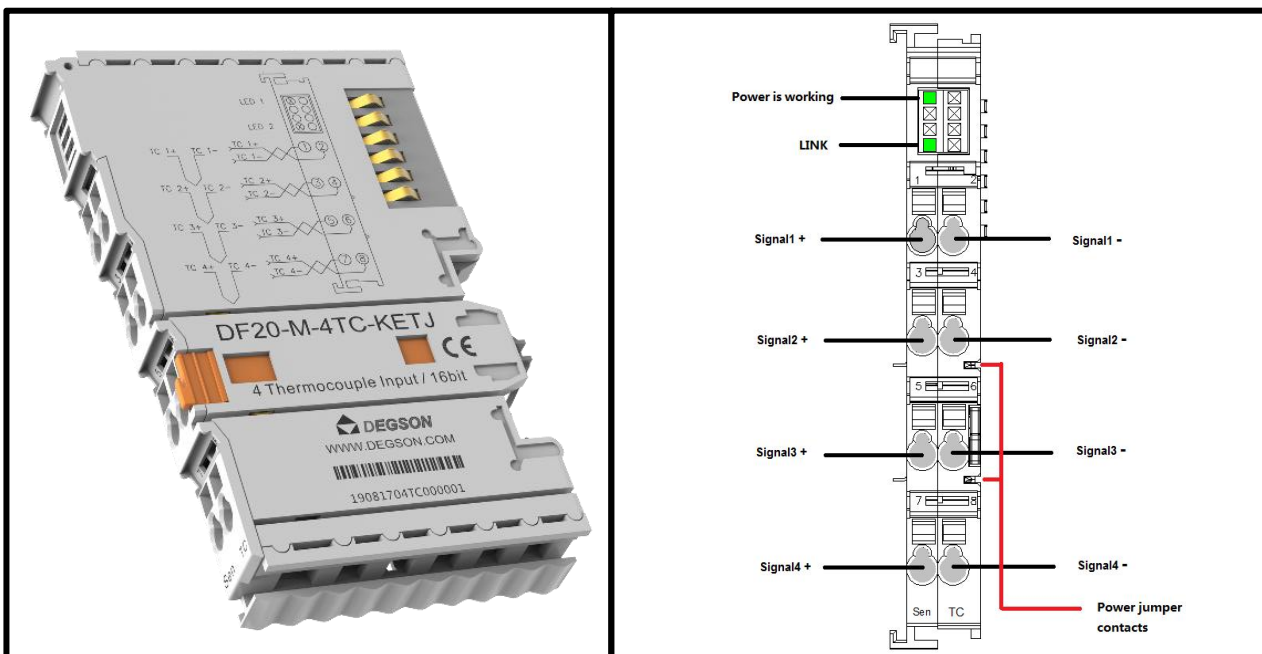
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4-channel thermocouple measurement (DF20-M-4TC-KETJ)

- This module uses 4-channel thermocouple measurement and supports K/E/T/J/B/S/R/N/L types.
- Supports four-way sensors.
- Supports 2-wire sensors.
- The module reserves four cold-side compensation output channels to compensate for cold-side temperature differences.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

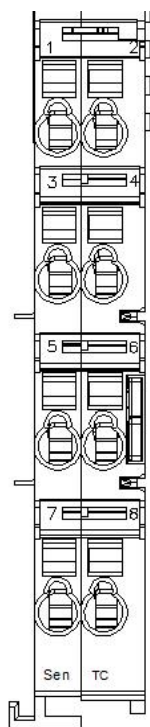


1. Specification parameters

technical information	
Number of channels	4
Sensor type	Thermocouples
signal type	E、J、T、K、B、S、R、N、L
Cold End Compensation	Internal and external (internal accuracy $\leq 3K$)
temperature coefficient	$\leq 50\text{ppm/K}$
module diagnostics	be
Enter the connection type	2-wire
Resolution	16 Bit, 0.1°C /per digit
Precision	$\pm 0.3\%$
data size	8 Byte
temperature error	$\pm 0.5\%$
Measuring range	$-270^{\circ}\text{C} \sim 1370^{\circ}\text{C}$
Supply voltage (system)	5VDC; Through data contact
Power consumption	$< 70\text{mA}$
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
frequency interference suppression	10Hz 50Hz 60Hz 400Hz
Conversion time	125ms
Error diagnosis, reverse circuit protection	Yes
Diagnosis	disconnection/parameter assignment error
process alarms	upper/lower limit per channel
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	$0.2 \sim 2.5\text{mm}^2/28 \sim 14\text{AWG}$
Stripped wire length	$8 \sim 9\text{mm}/0.31 \sim 0.35\text{inches}$
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	$-25 \sim 60^{\circ}\text{C}$
Permissible ambient temperature (storage)	$-40 \sim 85^{\circ}\text{C}$
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: $0 \sim 2000\text{m}$
mounting position	Arbitrary
Relative humidity (non-condensing)	$5 \sim 95\%\text{RH}$
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

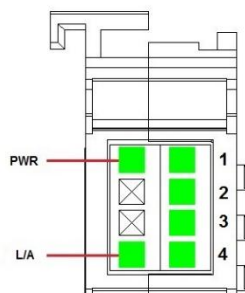
2. hardware interface

Wiring Terminal Definition



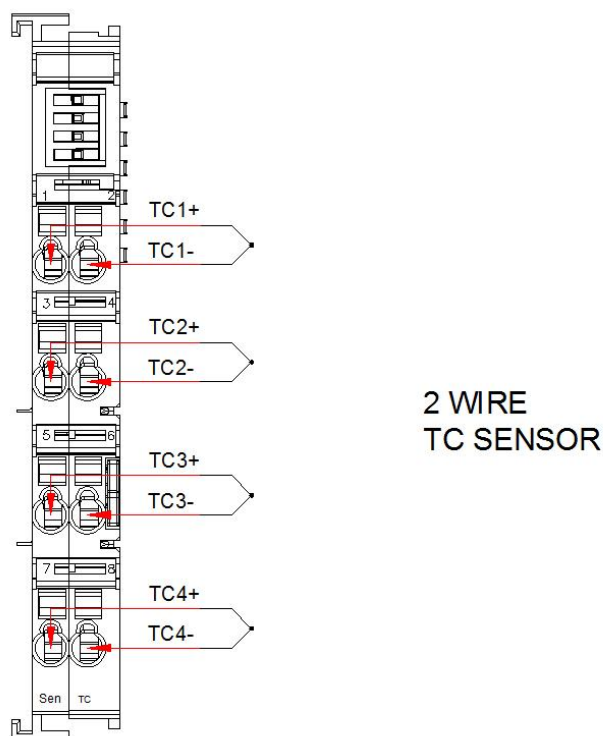
terminal serial number	Signal	Description
1	TC 1 positive pole	Signal input channel 1
2	TC 1 negative pole	
3	TC 2 positive pole	Signal input channel 2
4	TC 2 negative pole	
5	TC 3 positive pole	Signal input channel 3
6	TC 3 negative pole	
7	TC 4 positive pole	Signal input channel 4
8	TC 4 negative pole	

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		Module power supply and initialization are normal
	Green light out		Abnormal module power supply and initialization
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	Green light blinking		Module channel 1 is sampled normally
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
2	Green light blinking		Module channel 2 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
3	Green light blinking		Module channel 3 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
4	Green light blinking		Module channel 4 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect

Wiring Diagram



As shown in the pi

There are 4 channels in total, respectively 1,2 for channel 1; 3,4 for channel 2; 5,6 for channel 3; 7,8 for channel 4.

This module uses a two-wire sensor for connection, connecting the positive terminal of the sensor to port 1, the negative terminal to port 2, and so on.

This module reserves four cold end compensation output channels to compensate for the cold end temperature difference, if you need to compensate, you only need to compensate once in the initial commissioning.

3. process data definitions

- 4-channel thermocouple measurement module, occupying 4 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-4TC-KETJ_HoldRegBlock Size:4
0	IB0	1Word	TC0	
	IB1			
1	IB2	1Word	TC1	
	IB3			
2	IB4	1Word	TC2	

	IB5			
3	IB6	1 Word	TC3	
	IB7			

➤ process data definition statement

K type			
Temperature	Decimal	Hexadecimal	Scope note
>1370	32767	7FFF	overflow
1370	13700	3584	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type E			
Temperature	Decimal	Hexadecimal	Scope note
>1000	32767	7FFF	overflow
1000	10000	2710	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

T type			
Temperature	Decimal	Hexadecimal	Scope note
>400	32767	7FFF	overflow
400	4000	FA0	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection
J type			
Temperature	Decimal	Hexadecimal	Scope note
>1200	32767	7FFF	overflow
1200	12000	2EE0	Normal range
-210	-2100	F7CC	
<-210	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type B			
Temperature	Decimal	Hexadecimal	Scope note
>1820	32767	7FFF	overflow

1820	18200	4718	Normal range
50	500	1F4	
<50	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

S type			
Temperature	Decimal	Hexadecimal	Scope note
>1760	32767	7FFF	overflow
1760	17600	44C0	Normal range
-50	-500	FE0C	
<-50	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type R			
Temperature	Decimal	Hexadecimal	Scope note
>1770	32767	7FFF	overflow
1770	17700	4524	Normal range
-50	-500	FE0C	

<-50	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

N type			
Temperature	Decimal	Hexadecimal	Scope note
>1300	32767	7FFF	overflow
1300	13000	32C8	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

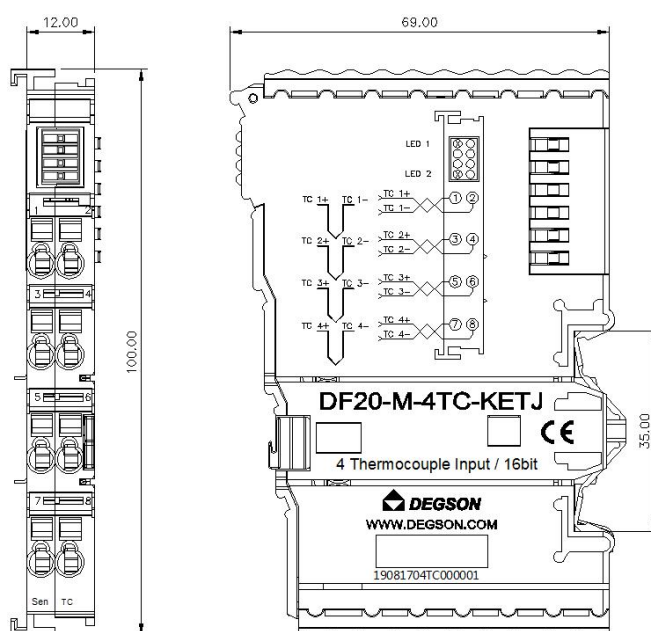
Type C			
Temperature	Decimal	Hexadecimal	Scope note
>2320	32767	7FFF	overflow
2320	23200	5AA0	Normal range
0	0	0	
<0	-32767	8001	Underflow
Unconnected	-32768	8000	Disconnect

sensor			detection
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L type			
Temperature	Decimal	Hexadecimal	Scope note
>900	32767	7FFF	overflow
900	9000	2328	Normal range
-200	-2000	F830	
<-200	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

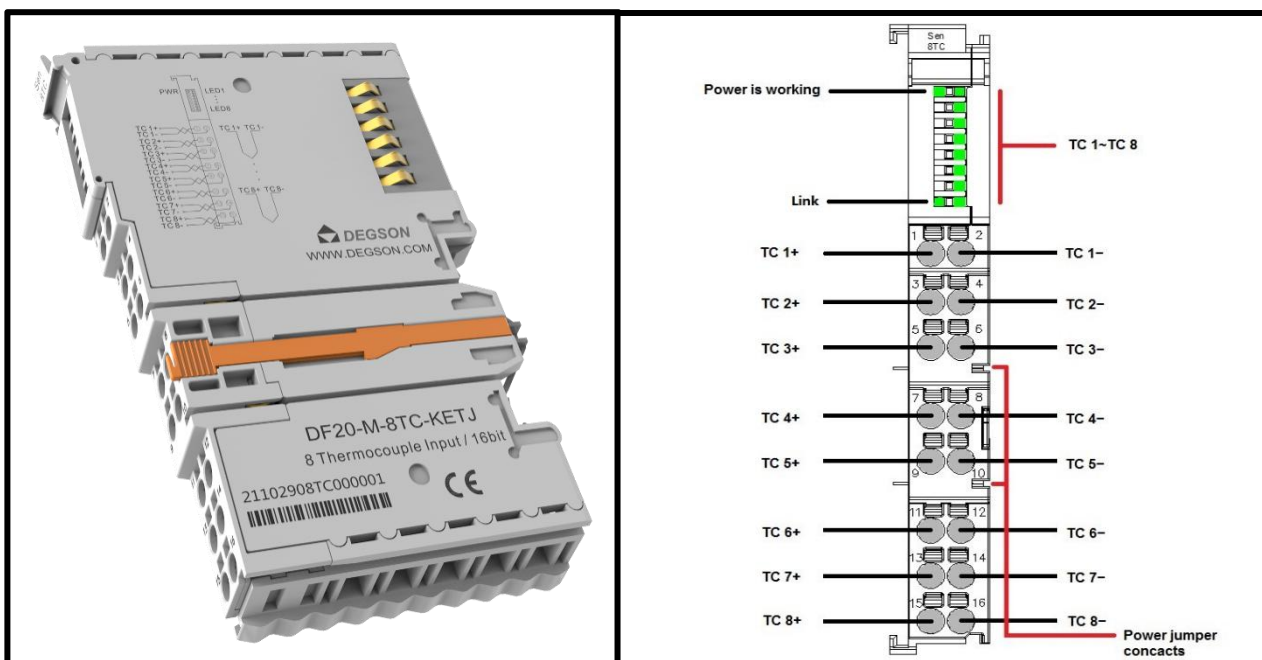
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel thermocouple measurement (DF20-M-8TC-KETJ)

- This module uses 8-channel thermocouple measurement and supports K/E/T/J/B/S/R/N/L types.
- Supports eight sensors.
- Supports 2-wire sensors.
- The module reserves eight cold-side compensation output channels to compensate for cold-side temperature differences.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Each channel has an LED indicator.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

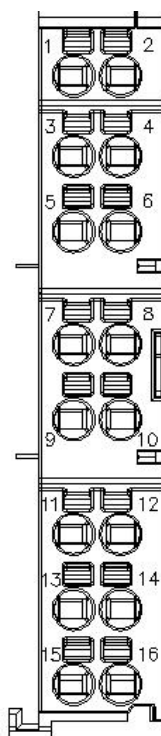


1. Specification parameters

technical information	
Number of channels	8
Sensor type	Thermocouples
signal type	E、J、T、K、B、S、R、N、L
Cold End Compensation	Internal and external (internal accuracy $\leq 3K$)
temperature coefficient	$\leq 50\text{ppm/K}$
module diagnostics	be
Enter the connection type	2-wire
Resolution	16 Bit, 0.1°C /per digit
Precision	$\pm 0.3\%$
data size	16 Byte
temperature error	$\pm 0.5\%$
Measuring range	$-270^{\circ}\text{C} \sim 1370^{\circ}\text{C}$
Supply voltage (system)	5VDC; Through data contact
Power consumption	$< 100\text{mA}$
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
frequency interference suppression	10Hz 50Hz 60Hz 400Hz
Conversion time	125ms
Error diagnosis, reverse circuit protection	Yes
Diagnosis	disconnection/parameter assignment error
process alarms	upper/lower limit per channel
Indicator light	9x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	$0.2 \sim 1.5\text{mm}^2/28 \sim 16\text{AWG}$
Stripped wire length	$8 \sim 9\text{mm}/0.31 \sim 0.35\text{inches}$
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	$-25 \sim 60^{\circ}\text{C}$
Permissible ambient temperature (storage)	$-40 \sim 85^{\circ}\text{C}$
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: $0 \sim 2000\text{m}$
mounting position	Arbitrary
Relative humidity (non-condensing)	$5 \sim 95\%\text{RH}$
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

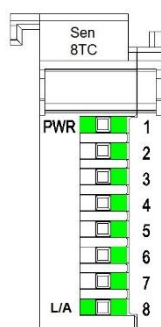
2. hardware interface

Wiring Terminal Definition



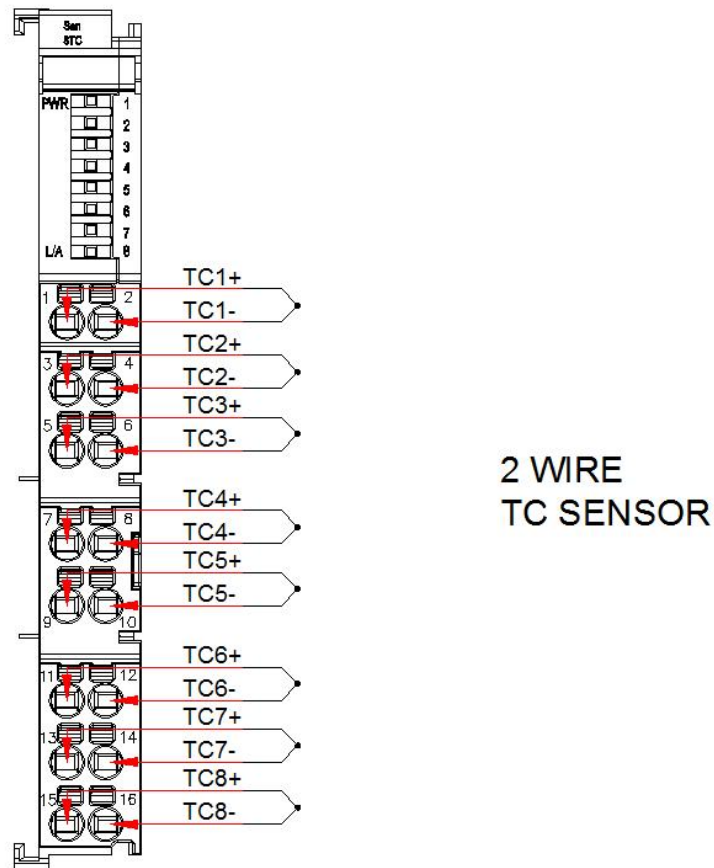
terminal serial number	Signal	Description
1	TC 1 positive pole	Signal input channel 1
2	TC 1 negative pole	
3	TC 2 positive pole	Signal input channel 2
4	TC 2 negative pole	
5	TC 3 positive pole	Signal input channel 3
6	TC 3 negative pole	
7	TC 4 positive pole	Signal input channel 4
8	TC 4 negative pole	
9	TC 5 positive pole	Signal input channel 5
10	TC 5 negative pole	
11	TC 6 positive pole	Signal input channel 6
12	TC 6 negative pole	
13	TC 7 positive pole	Signal input channel 7
14	TC 7 negative pole	
15	TC 8 positive pole	Signal input channel 8
16	TC 8 negative pole	

LED indicator definition



LED indicator light	State		Meaning
PWR	The green light is always on		Module power supply and initialization are normal
	Green light out		Abnormal module power supply and initialization
L/A	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults
1	Green light blinking		Module channel 1 is sampled normally
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
2	Green light blinking		Module channel 2 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
3	Green light blinking		Module channel 3 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
4	Green light blinking		Module channel 4 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
5	Green light blinking		Module channel 5 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
6	Green light blinking		Module channel 6 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
7	Green light blinking		Module channel 7 is sampled normally
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect
8	Green light blinking		Module channel 8 normal sampling
	The green light is always on		Sampling value exceeds upper and lower limits
	Green light out		Disconnect

Wiring Diagram



As shown in the picture.

A total of 8 channels, respectively, 1,2 for channel 1; 3,4 for channel 2; 5,6 for channel 3; 7,8 for channel 4; 9,10 for channel 5; 11,12 for channel 6; 13,14 for channel 7; 15,16 for channel 8.

This module uses a two-wire sensor for connection, connecting the positive terminal of the sensor to port 1, the negative terminal to port 2, and so on.

This module reserves four cold end compensation output channels to compensate for the cold end temperature difference, if you need to compensate, you only need to compensate once in the initial commissioning.

3. process data definitions

Input data: 8 Words	
Word 1	TC Value CH1: The first channel input data
Word 2	TC Value CH2: Second channel input data
Word 3	TC Value CH3: The third channel input data
Word 4	TC Value CH4: The fourth channel input data
Word 5	TC Value CH5: Fifth channel input data
Word 6	TC Value CH6: Sixth channel input data
Word 7	TC Value CH7: The seventh channel input data
Word 8	TC Value CH8: Eighth channel input data
Output data: 8 Words	
Word 1	Offset Value CH1: Temperature compensation value of the first channel
Word 2	Offset Value CH2: Second channel temperature compensation value
Word 3	Offset Value CH3: The third channel temperature compensation value
Word 4	Offset Value CH4: The fourth channel temperature compensation value
Word 5	Offset Value CH5: Fifth channel temperature compensation value
Word 6	Offset Value CH6: Temperature compensation value of the sixth channel
Word 7	Offset Value CH7: Temperature compensation value of the seventh channel
Word 8	Offset Value CH8: Temperature compensation value of the eighth channel

➤ process data definition statement

K type			
Temperature	Decimal	Hexadecimal	Scope note
>1370	32767	7FFF	overflow
1370	13700	3584	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type E			
Temperature	Decimal	Hexadecimal	Scope note
>1000	32767	7FFF	overflow
1000	10000	2710	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

T type			
Temperature	Decimal	Hexadecimal	Scope note

>400	32767	7FFF	overflow
400	4000	FA0	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

J type			
Temperature	Decimal	Hexadecimal	Scope note
>1200	32767	7FFF	overflow
1200	12000	2EE0	Normal range
-210	-2100	F7CC	
<-210	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type B			
Temperature	Decimal	Hexadecimal	Scope note
>1820	32767	7FFF	overflow
1820	18200	4718	Normal range

50	500	1F4	
<50	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

S type			
Temperature	Decimal	Hexadecimal	Scope note
>1760	32767	7FFF	overflow
1760	17600	44C0	Normal range
-50	-500	FE0C	
<-50	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type R			
Temperature	Decimal	Hexadecimal	Scope note
>1770	32767	7FFF	overflow
1770	17700	4524	Normal range
-50	-500	FE0C	
<-50	-32767	8001	Underflow

Unconnected sensor	-32768	8000	Disconnect detection
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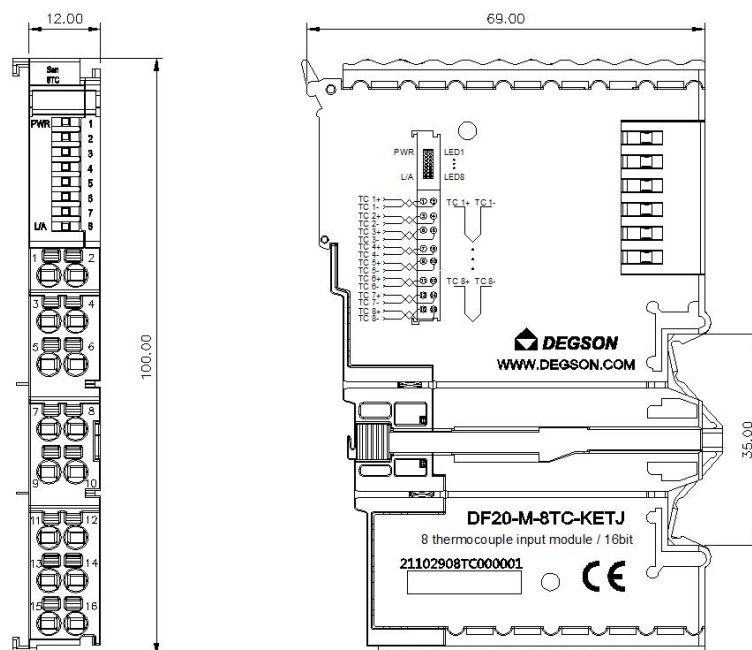
N type			
Temperature	Decimal	Hexadecimal	Scope note
>1300	32767	7FFF	overflow
1300	13000	32C8	Normal range
-270	-2700	F574	
<-270	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

Type C			
Temperature	Decimal	Hexadecimal	Scope note
>2320	32767	7FFF	overflow
2320	23200	5AA0	Normal range
0	0	0	
<0	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

L type			
Temperature	Decimal	Hexadecimal	Scope note
>900	32767	7FFF	overflow
900	9000	2328	Normal range
-200	-2000	F830	
<-200	-32767	8001	Underflow
Unconnected sensor	-32768	8000	Disconnect detection

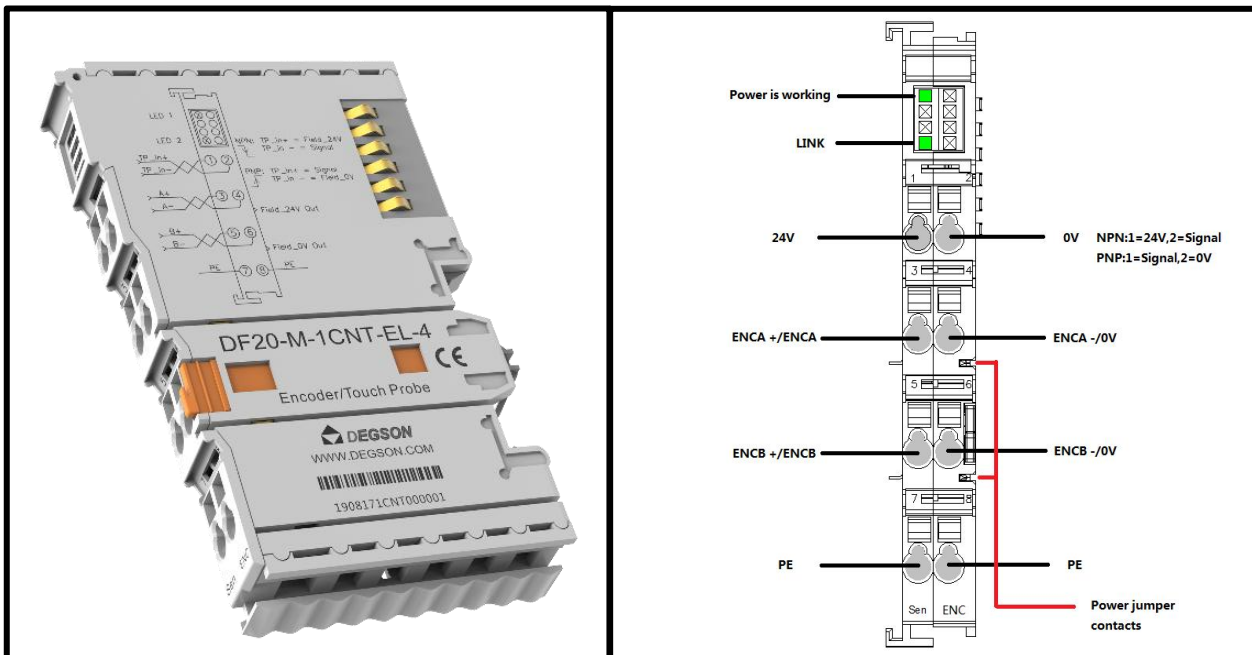
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



1 channel encoder input/24VDC (DF20-M-1CNT-EL-4)

- This module uses 1-channel encoder input, and the input signal voltage is 24VDC.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

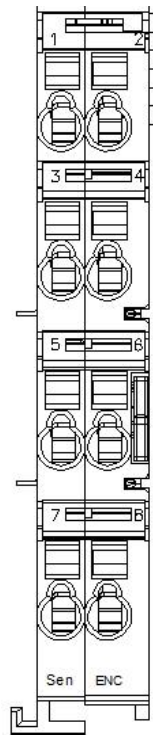


1. Specification parameters

technical information	
Number of channels	1
Maximum counting frequency	1Mhz
input signal type	incremental encoders
input signal voltage	24VDC
Enter the connection type	4-wire
Resolution	32 Bit
Precision	± 1 pulse
data size	12 Byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

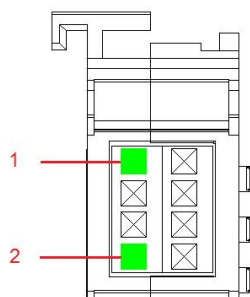
2. hardware interface

Wiring Terminal Definition



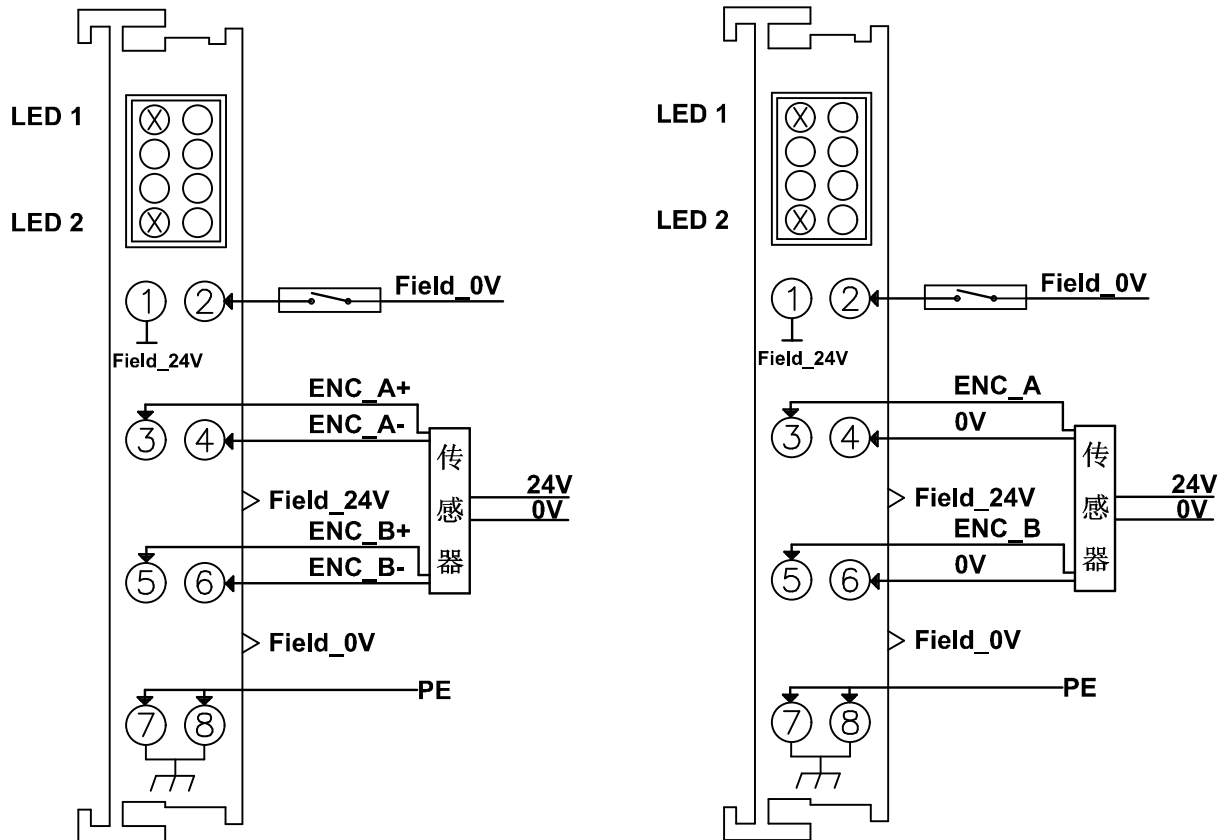
terminal serial number	Signal	Description
1	24V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
2	0V	
3	Quadrature Encoder A+	24V input voltage quadrature encoder
4	Quadrature Encoder A-	
5	Quadrature Encoder B+	
6	Quadrature Encoder B-	
7	Grounding	module grounding
8	Grounding	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



A+/A-&B+/B-differential signal wiring diagram A/B signal wiring diagram

In the picture on the left, the quadrature encoder inputs A+/A- and B+/B- correspond to pins 3, 4, 5, and 6; the electronic probe input corresponds to pins 1 and 2. The module supports NPN switch input by default, that is Pin 1 is internally connected to 24V, pin 2 is externally connected to a low effective signal; pins 7 and 8 are connected to safety ground.

In the picture on the right, the quadrature encoder inputs A and B correspond to pins 3 and 5; pins 4 and 6 are connected to the sensor 0V; the electronic probe input corresponds to pins 1 and 2. The module supports NPN switch input by default, which is 1 Pins are internally connected to 24V, pin 2 is externally connected to a low active signal; pins 7 and 8 are connected to safety ground.

3. process data definitions

- Single-channel encoder pulse counting module, occupying 6 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-1CNT-EL-4_HoldRegBlock Size:6
0	QB0	1Word	Command	
	QB1			
1	QB0	1Word	ENC State	
	QB1			
2	IB0	1Word	CNT Value[16..31] Ch0	
	IB1			
3	IB2	1Word	CNT Value[0..15] Ch0	
	IB3			
4	IB4	1Word	Latch Value[16..31] Ch0	
	IB5			
5	IB6	1Word	Latch Value[0..15] Ch0	
	IB7			

- Description of process data.

Name	Meaning	Outputting process data	Description
Command	Channel 1 control word	0x012B	Start counting
		0x012C	to clear the current count
Name	Meaning	Input process data	Description
ENC State	Channel 1 status word	0x010B	counting status
		0x010C	Clear status
		0x0109	Idle state
		0x010E	error state
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB1 IB0]	Low byte storage:IB0	Bit16~bit23
		High byte storage:IB1	Bit24~bit31
CNT Value[0..15] Ch0	Lower 16 bits of channel 1 count value [IB3 IB2]	Low byte storage:IB2	bit0~bit7
		High byte storage:IB3	bit8~bit15
Latch Value[16..31]Ch0	Channel 1 latch value high 16 bits [IB5 IB4]	Low byte storage:IB4	Bit16~bit23
		High byte storage:IB5	Bit24~bit31
Latch Value[0..15] Ch0	Channel 1 latch value lower 16 bits [IB7 IB6]	Low byte storage:IB6	bit0~bit7
		High byte storage:IB7	bit8~bit15

Example.

If the actual count value is 0x12345678;

Then CNT Value[16..31] Ch0 = 0x1234;

CNT Value[0..15] Ch0 = 0x5678;

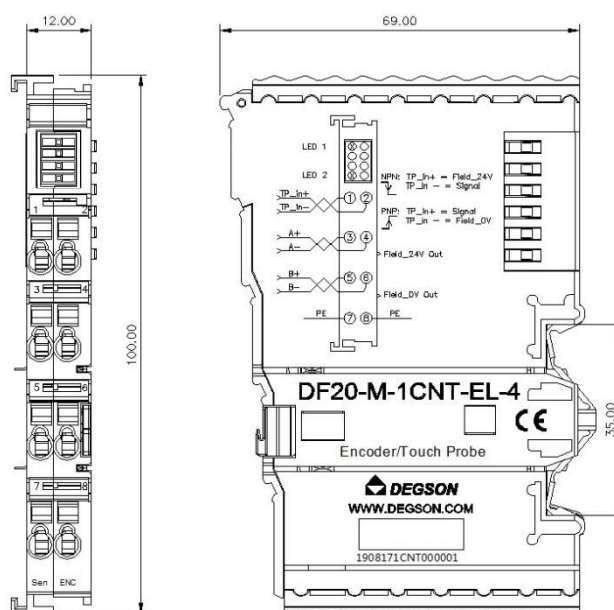
If the actual latch value is 0x12345678;

Then Latch Value[16..31]Ch0 = 0x1234;

Latch Value[0..15]Ch0 = 0x5678;

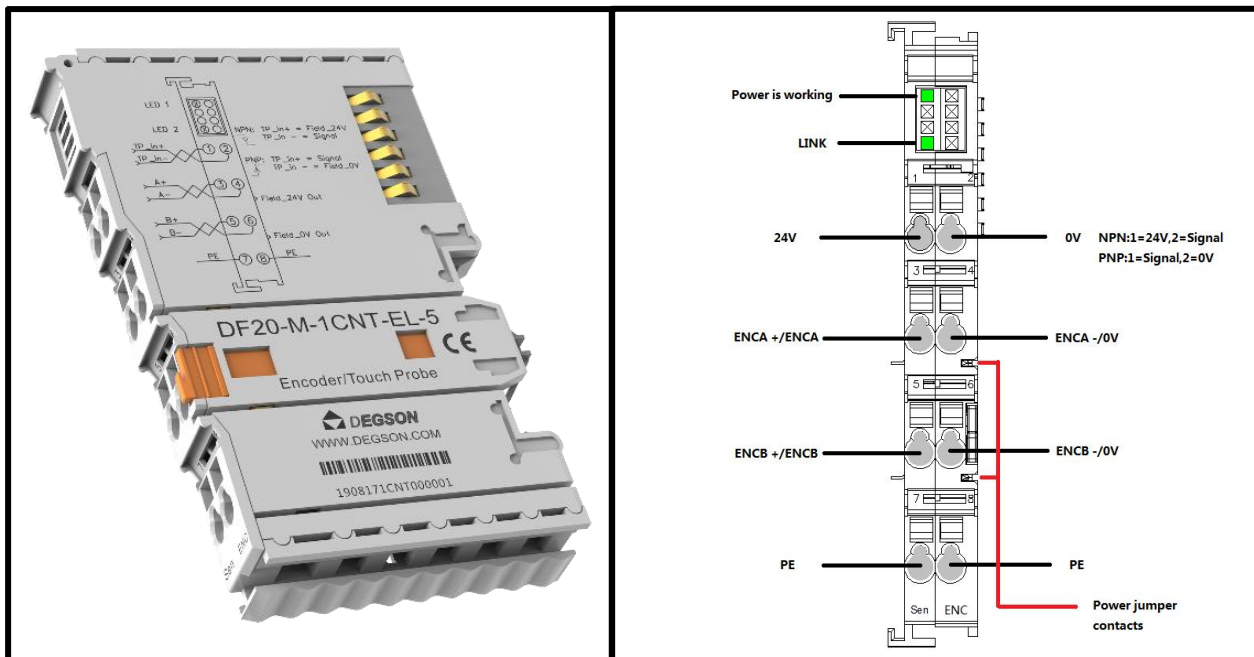
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



1-channel encoder input/5VDC (DF20-M-1CNT-EL-5)

- This module uses 1-channel encoder input and the input signal voltage is 5VDC.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Transmission in 16 resolution.
- The protection grade is IP20.

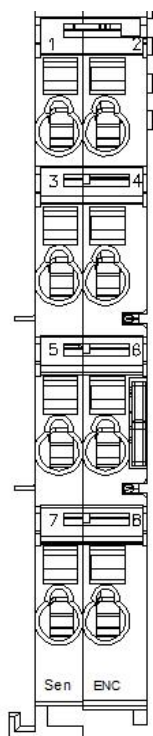


1. Specification parameters

technical information	
Number of channels	1
Maximum counting frequency	1Mhz
input signal type	incremental encoders
input signal voltage	5VDC
Enter the connection type	4-wire
Resolution	32 Bit
Precision	± 1 pulse
data size	12 Byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

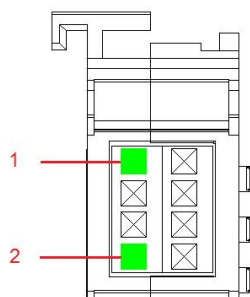
2. hardware interface

Wiring Terminal Definition



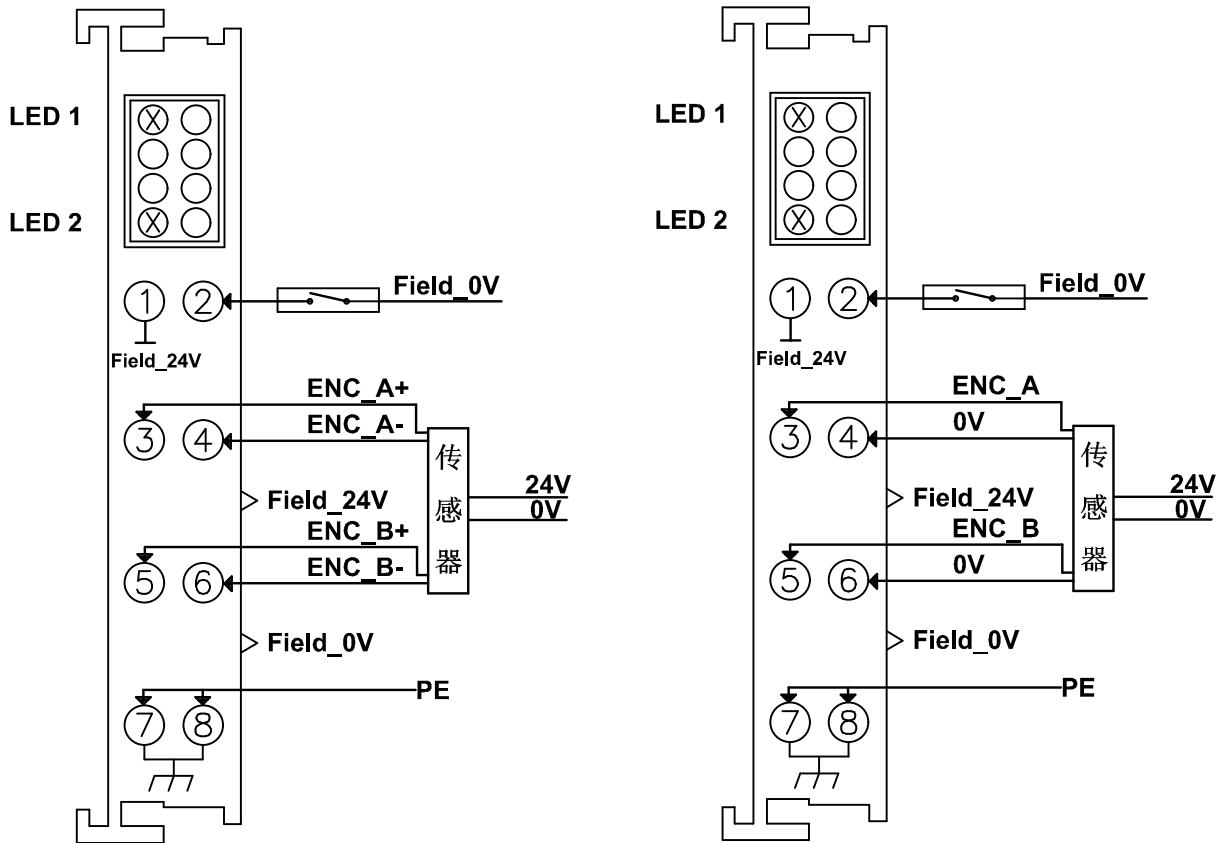
terminal serial number	Signal	Description
1	24V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
2	0V	
3	Quadrature Encoder A+	5V input voltage quadrature encoder
4	Quadrature Encoder A-	
5	Quadrature Encoder B+	
6	Quadrature Encoder B-	
7	Grounding	module grounding
8	Grounding	

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



A+/A-&B+/B-differential signal wiring diagram A/B signal wiring diagram

In the picture on the left, the quadrature encoder inputs A+/A- and B+/B- correspond to pins 3, 4, 5, and 6; the electronic probe input corresponds to pins 1 and 2. The module supports NPN switch input by default, that is Pin 1 is internally connected to 24V, pin 2 is externally connected to a low effective signal; pins 7 and 8 are connected to safety ground.

In the picture on the right, the quadrature encoder inputs A and B correspond to pins 3 and 5; pins 4 and 6 are connected to the sensor 0V; the electronic probe input corresponds to pins 1 and 2. The module supports NPN switch input by default, which is 1 Pins are internally connected to 24V, pin 2 is externally connected to a low active signal; pins 7 and 8 are connected to safety ground.

3. process data definitions

- Single-channel encoder pulse counting module, occupying 6 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Description	DF20-M-1CNT-EL-5_HoldRegBlock Size:6
0	QB0	1Word	Command	
	QB1			
1	QB0	1Word	ENC State	
	QB1			
2	IB0	1Word	CNT Value[16..31] Ch0	
	IB1			
3	IB2	1Word	CNT Value[0..15] Ch0	
	IB3			
4	IB4	1Word	Latch Value[16..31] Ch0	
	IB5			
5	IB6	1Word	Latch Value[0..15] Ch0	
	IB7			

- Description of process data.

Name	Meaning	Outputting process data	Description
Command	Channel 1 control word	0x012B	Start counting
		0x012C	to clear the current count
Name	Meaning	Input process data	Description
ENC State	Channel 1 status word	0x010B	counting status
		0x010C	Clear status
		0x0109	Idle state
		0x010E	error state
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB1 IB0]	Low byte storage:IB0	Bit16~bit23
		High byte storage:IB1	Bit24~bit31
CNT Value[0..15] Ch0	Lower 16 bits of channel 1 count value [IB3 IB2]	Low byte storage:IB2	bit0~bit7
		High byte storage:IB3	bit8~bit15
Latch Value[16..31]Ch0	Channel 1 latch value high 16 bits [IB5 IB4]	Low byte storage:IB4	Bit16~bit23
		High byte storage:IB5	Bit24~bit31
Latch Value[0..15] Ch0	Channel 1 latch value lower 16 bits [IB7 IB6]	Low byte storage:IB6	bit0~bit7
		High byte storage:IB7	bit8~bit15

Example.

If the actual count value is 0x12345678;

Then CNT Value[16..31] Ch0 = 0x1234;

CNT Value[0..15] Ch0 = 0x5678;

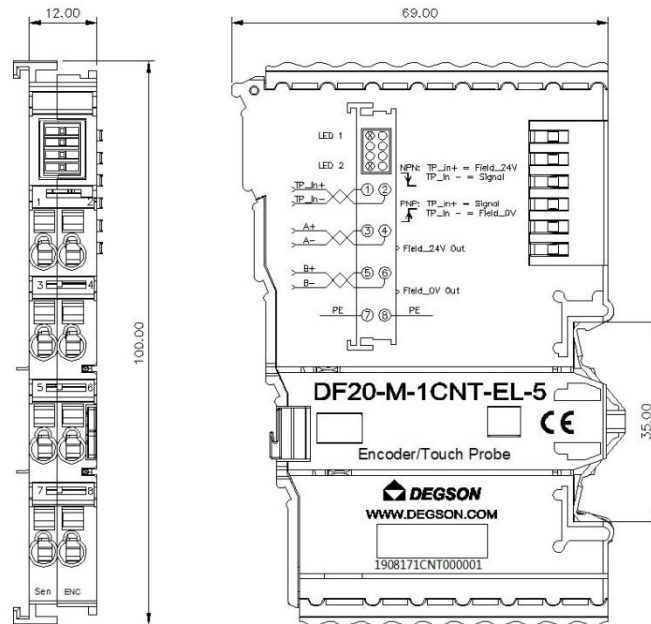
If the actual latch value is 0x12345678;

Then Latch Value[16..31]Ch0 = 0x1234;

Latch Value[0..15]Ch0 = 0x5678;

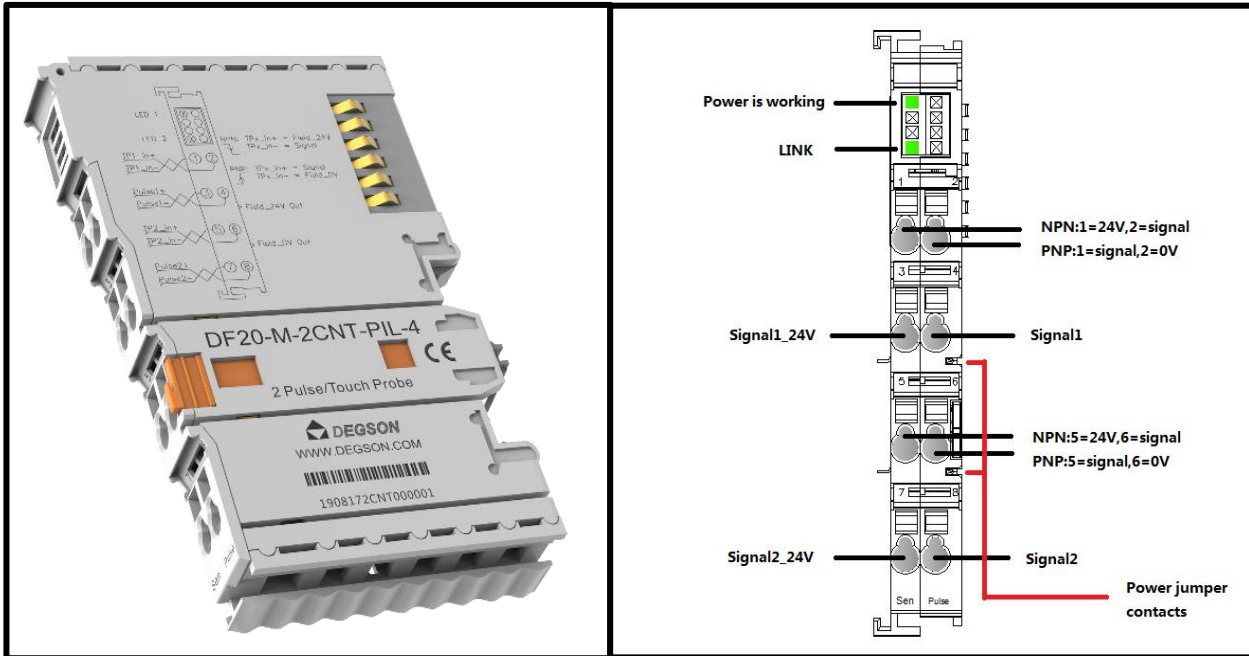
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



2-channel pulse counting/24VDC (DF20-M-2CNT-PIL-4)

- This pulse counting module uses 2-channel pulse counting. The input signal voltage is 24VDC.
- Each input module has an anti-interference filter.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- The protection grade is IP20.

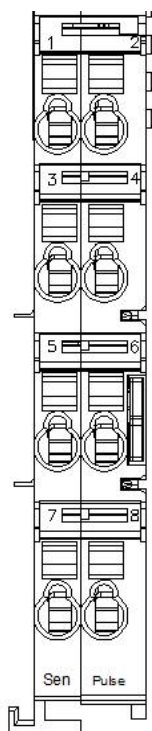


1. Specification parameters

technical information	
Number of channels	2
Maximum counting frequency	1Mhz
input signal type	Pulse signals
input signal voltage	24VDC
Enter the connection type	2-wire
Resolution	32 Bit
Precision	± 1 pulse
data size	28 Byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60℃
Permissible ambient temperature (storage)	-40~85℃
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

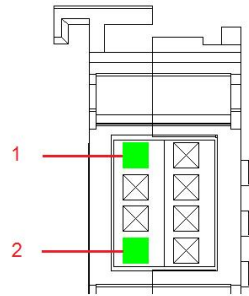
2. hardware interface

Wiring Terminal Definition



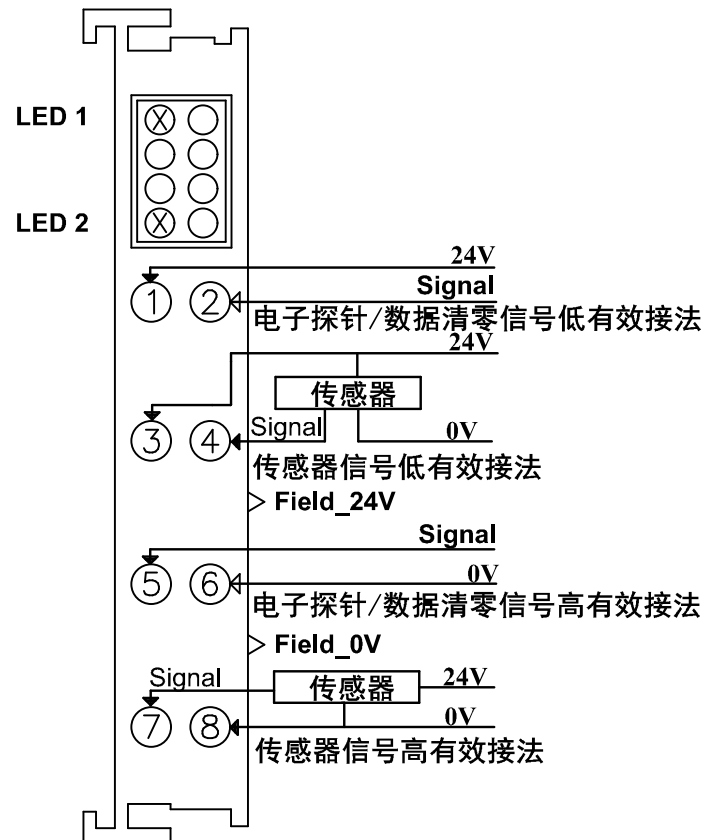
terminal serial number	Signal	Description
1	24V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
2	0V	
3	Signal 1 24V	Channel 1 pulse input
4	Signal 1	
5	24V	
6	0V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
7	Signal 2 24V	
8	Signal 2	Channel 2 pulse input

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



As shown in the picture.

The picture above shows the wiring diagram of DF20-M-2CNT-PIL-4:

(1) 1, 2 pins is the first channel electronic probe / first channel data zero signal input, the specific choice of which function can be configured according to demand.

(2) 3, 4 feet is the first pulse input channel, as shown in the figure for the sensor signal low effective connection.

(3) Pins 5 and 6 are the second channel electronic probe/second channel data clear signal inputs; the usage is consistent with the first channel electronic probe/first channel data clear signal input.

(4) 7, 8 feet is the second pulse input channel, as shown in the figure for the sensor signal high effective connection.

Note 1: The latch of the counting module is the electronic probe function often found in the servo. After the electronic probe signal (such as a photoelectric switch) is triggered, the card itself directly latches the current value. This is compared to the host computer. It is much faster for the PLC to judge the probe signal and then latch the position. However, there is a delay in the host computer's judgment and the position is inaccurate. Some packaging industries need to use this function. If not, don't worry about this function.

(1) When the module is an NPN switch input, pin 1 is internally connected to 24V, and pin 2 is externally connected to a low active signal;

(2) When the module is a PNP switch input, pin 1 is connected to a high active signal externally, and pin 2 is connected to 0V internally.

3. process data definitions

- 2-channel encoder pulse counting module, occupying 16 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description
0	QB0	1Word	QX0.0	CNT Ctl Ch0
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
1	QB2	1Word	Comp Value[16..31] Ch0	
	QB3			
2	QB4	1Word	Comp Value[0..15] Ch0	
	QB5			
3	QB6	1Word	QX0.0	CNT Ctl Ch1
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
4	QB8	1Word	Comp Value[16..31] Ch1	
	QB9			
5	QB10	1Word	Comp Value[0..15] Ch1	
	QB11			
6	IB0	1Word	IX0.0	CNT State Ch0
			IX0.1	Clear Signal Ch0
			IX0.2	Comp Flag Ch0
			IX0.3	Reserve 0x00

DF20-M-2CNT-PIL-4_HoldRegBlock
Size:16

DF20-M-2CNT-PIL-4_HoldRegBlock
Size:16

			IX0.4	
			IX0.5	
			IX0.6	
			IX0.7	
	IB1		IX1.0	
			IX1.1	
			IX1.2	
			IX1.3	
			IX1.4	
			IX1.5	
			IX1.6	
			IX1.7	
7	IB2	1Word	CNT Value[16..31] Ch0	
	IB3			
8	IB4	1Word	CNT Value[0..15] Ch0	
	IB5			
9	IB6	1Word	Latch Value[16..31] Ch0	
	IB7			
10	IB8	1Word	Latch Value[0..15] Ch0	
	IB9			
11	IB10	1Word	IX0.0	CNT State Ch1
			IX0.1	Clear Signal Ch1
			IX0.2	Comp Flag Ch1
			IX0.3	Reserve 0x00
	IX0.4			
	IX0.5			
	IX0.6			
	IX0.7			
	IX1.0			
	IX1.1			
	IX1.2			
	IX1.3			
	IX1.4			
	IX1.5			
	IX1.6			
	IX1.7			
12	IB12	1Word	CNT Value[16..31] Ch1	
	IB13			
13	IB14	1Word	CNT Value[0..15] Ch1	
	IB15			
14	IB16	1Word	Latch Value[16..31] Ch1	
	IB17			
15	IB18	1Word	Latch Value[0..15] Ch1	
	IB19			

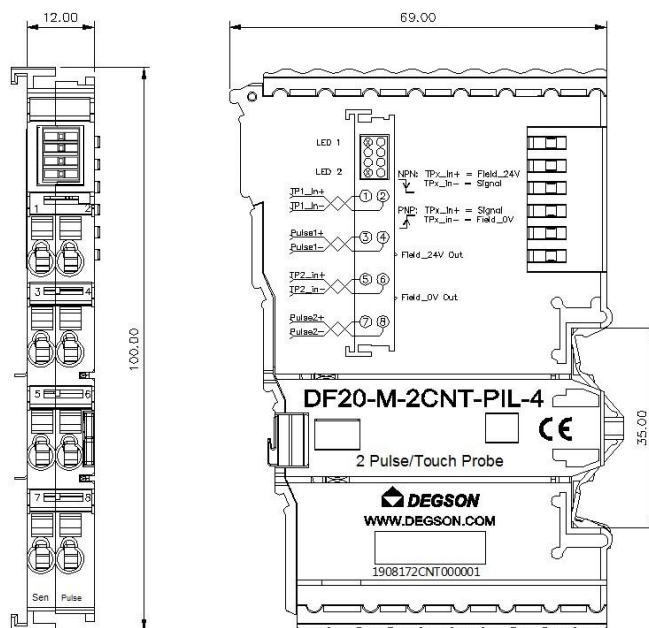
➤ Description of process data.

Name	Meaning	Outputting process data	Description
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1: Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1: Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated. 1: Enable channel 1 compare value
Comp Value[16..31] Ch0	Channel 1 comparison value 16 bits high [QB3 QB2]	Low byte storage: QB2	Bit16~bit23
		High byte storage: QB3	Bit24~bit31
Comp Value[0..15] Ch0	16 bits below the channel 1 comparison value [QB5 QB4]	Low byte storage: QB4	bit0~bit7
		High byte storage: QB5	bit8~bit15
CNT Ctl Ch1	second channel control word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1: Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1: Enable channel 2 compare value
Comp Value[16..31] Ch1	Channel 2 comparison value 16 bits high [QB9 QB8]	Low byte storage: QB8	Bit16~bit23
		High byte storage: QB9	Bit24~bit31
Comp Value[0..15] Ch1	16 bits below the channel 2 comparison value [QB11 QB10]	Low byte storage: QB10	bit0~bit7
		High byte storage: QB11	bit8~bit15
Name	Meaning	Input process data	Description
CNT State Ch0	First channel count status	IX0.0	0: Channel 1 stop counting. 1: Channel 1 starts counting
Clear Signal Ch0	first channel electronic probe/count clear signal	IX0.1	0: no channel 1 electron probe signal. 1: with channel 1 electron probe signal
Comp Flag Ch0	The first channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB3 IB2]	Low byte storage: IB2	Bit16~bit23
		High byte storage: IB3	Bit24~bit31
CNT Value[0..15] Ch0	The lower 16 bits of the channel	Low byte	bit0~bit7

	1 count value [IB5 IB4]	storage:IB4	
		High byte storage:IB5	bit8~bit15
Latch Value[16..31]Ch0	Channel 1 latch value high 16 bits [IB7 IB6]	Low byte storage:IB6	Bit16~bit23
		High byte storage:IB7	Bit24~bit31
Latch Value[0..15] Ch0	Lower 16 bits of channel 1 latch value [IB9 IB8]	Low byte storage:IB8	bit0~bit7
		High byte storage:IB9	bit8~bit15
CNT State Ch1	second channel counting status	IX0.0	0: Channel 2 stop counting. 1: Channel 2 starts counting
Clear Signal Ch1	second channel electronic probe/count clear signal	IX0.1	0: no channel 2 electron probe signal. 1: with channel 2 electron probe signal
Comp Flag Ch1	The second channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch1	Channel 2 count value 16 bits high [IB13 IB12]	Low byte storage:IB12	Bit16~bit23
		High byte storage:IB13	Bit24~bit31
CNT Value[0..15] Ch1	Channel 2 count value is 16 bits lower [IB15 IB14]	Low byte storage:IB14	bit0~bit7
		High byte storage:IB15	bit8~bit15
Latch Value[16..31]Ch1	Channel 2 latch value 16 bits high [IB17 IB16]	Low byte storage:IB16	Bit16~bit23
		High byte storage:IB17	Bit24~bit31
Latch Value[0..15] Ch1	Channel 2 latch value 16 bits lower [IB19 IB18]	Low byte storage:IB18	bit0~bit7
		High byte storage:IB19	bit8~bit15

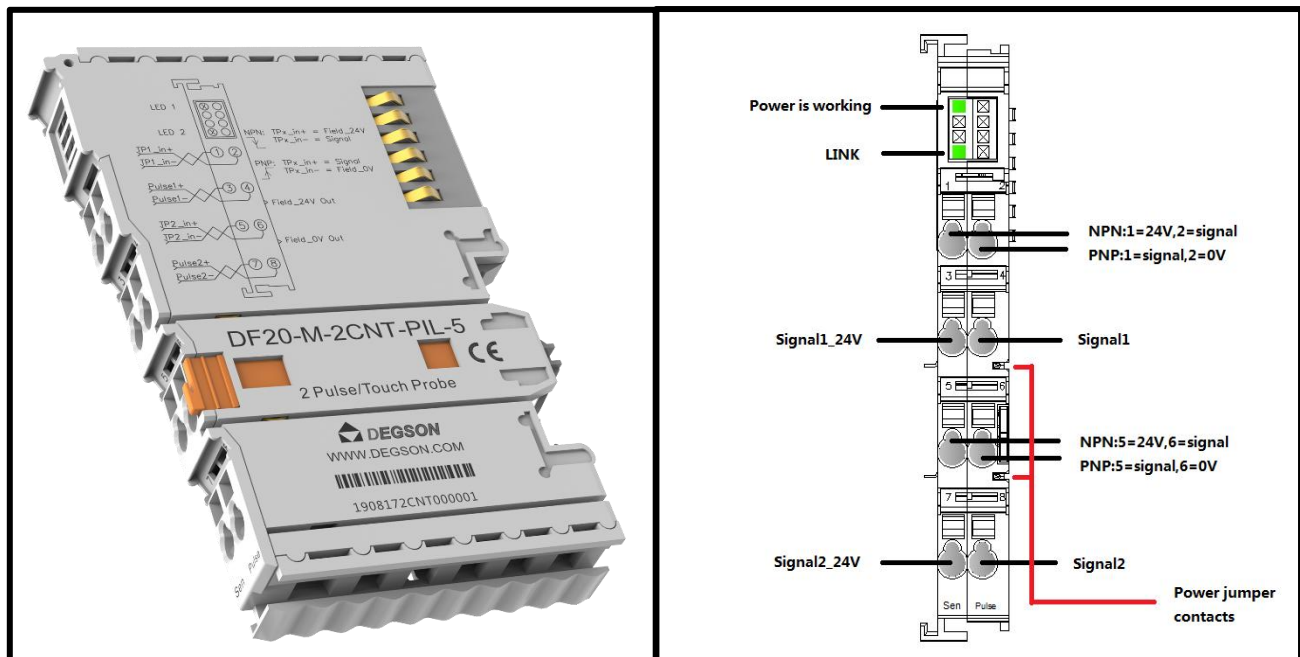
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



2-channel pulse counting/5VDC (DF20-M-2CNT-PIL-5)

- This pulse counting module uses 2-channel pulse counting. The input signal voltage is 5VDC.
- Each input module has an anti-interference filter.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Magnetic isolation between the field and system layers.
- Protection grade IP20

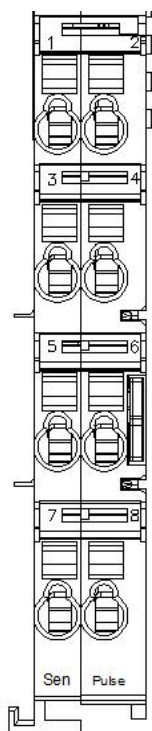


1. Specification parameters

technical information	
Number of channels	2
Maximum counting frequency	1Mhz
input signal type	Pulse signals
input signal voltage	5VDC
Enter the connection type	2-wire
Resolution	32 Bit
Precision	± 1 pulse
data size	28 Byte
Supply voltage (system)	5VDC; Through data contact
Power consumption	<30mA
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Isolation	500V system/field magnetic isolation
misdiagnosis	Yes
reverse circuit protection	Yes
Indicator light	2 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

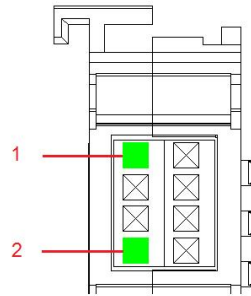
2. hardware interface

Wiring Terminal Definition



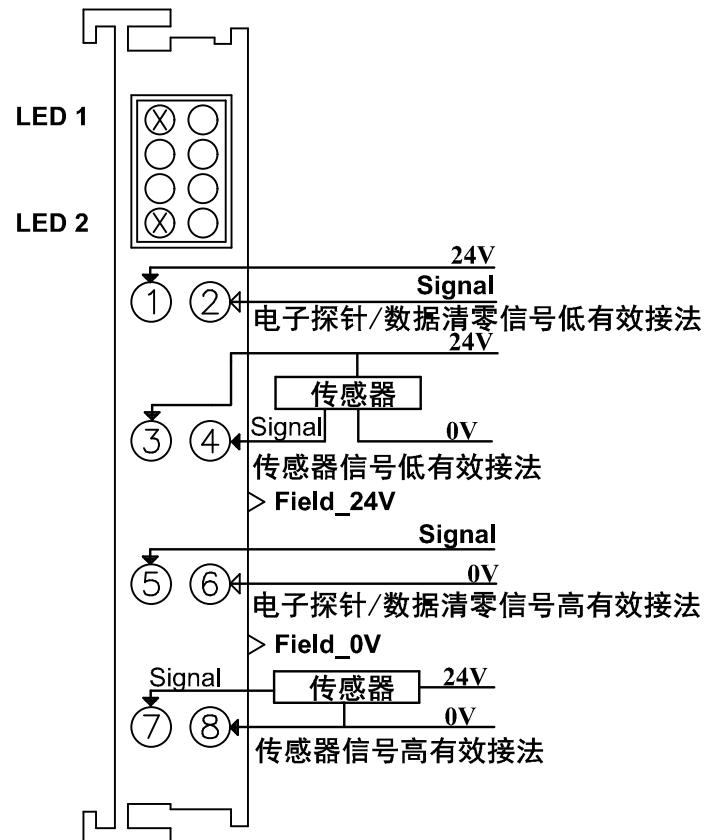
terminal serial number	Signal	Description
1	24V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
2	0V	
3	Signal 1 24V	Channel 1 pulse input
4	Signal 1	
5	24V	
6	0V	NPN: 1 internally connected to 24V, 2 externally connected to low effective signal PNP: 1 externally connected to high effective signal, 2 internally connected to 0V
7	Signal 2 24V	
8	Signal 2	Channel 2 pulse input

LED indicator definition



LED indicator light	State		Meaning
1	The green light is always on		The power supply is functioning properly
	Green light out		The power supply is operating abnormally
2	Power-up phase	Green light on	The module is being initialized
		Green light out	module initialization is complete
	operational phase	Green light blinking	module is functioning properly
		Green light out	module operational faults

Wiring Diagram



As shown in the picture.

The picture above shows the wiring diagram of DF20-M-2CNT-PIL-5:

(1) 1, 2 pins is the first channel electronic probe / first channel data zero signal input, the specific choice of which function can be configured according to demand.

(2) 3, 4 feet is the first pulse input channel, as shown in the figure for the sensor signal low effective connection.

(3) Pins 5 and 6 are the second channel electronic probe/second channel data clear signal inputs; the usage is consistent with the first channel electronic probe/first channel data clear signal input.

(4) 7, 8 feet is the second pulse input channel, as shown in the figure for the sensor signal high effective connection.

Note 1: The latch of the counting module is the electronic probe function often found in the servo.

After the electronic probe signal (such as a photoelectric switch) is triggered, the card itself directly latches the current value. This is compared to the host computer. It is much faster for the PLC to judge the probe signal and then latch the position. However, there is a delay in the host computer's judgment and the position is inaccurate. Some packaging industries need to use this function. If not, don't worry about this function.

(1) When the module is an NPN switch input, pin 1 is internally connected to 24V, and pin 2 is externally connected to a low active signal;

(2) When the module is a PNP switch input, pin 1 is connected to a high active signal externally, and pin 2 is connected to 0V internally.

3. process data definitions

- 2-channel encoder pulse counting module, occupying 16 holding registers.
- Holding Register Block Data Structure Definition.

HoldReg	Byte	Format	Bit	Description
0	QB0	1Word	QX0.0	CNT Ctl Ch0
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
1	QB2	1Word	Comp Value[16..31] Ch0	
	QB3			
2	QB4	1Word	Comp Value[0..15] Ch0	
	QB5			
3	QB6	1Word	QX0.0	CNT Ctl Ch1
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
4	QB8	1Word	Comp Value[16..31] Ch1	
	QB9			
5	QB10	1Word	Comp Value[0..15] Ch1	
	QB11			
6	IB0	1Word	IX0.0	CNT State Ch0
			IX0.1	Clear Signal Ch0
			IX0.2	Comp Flag Ch0
			IX0.3	Reserve 0x00

DF20-M-2CNT-PIL-5_HoldRegBlock
Size:16

DF20-M-2CNT-PIL-5_HoldRegBlock
Size:16

			IX0.4	
			IX0.5	
			IX0.6	
			IX0.7	
	IB1		IX1.0	
			IX1.1	
			IX1.2	
			IX1.3	
			IX1.4	
			IX1.5	
			IX1.6	
			IX1.7	
7	IB2	1Word	CNT Value[16..31] Ch0	
	IB3			
8	IB4	1Word	CNT Value[0..15] Ch0	
	IB5			
9	IB6	1Word	Latch Value[16..31] Ch0	
	IB7			
10	IB8	1Word	Latch Value[0..15] Ch0	
	IB9			
11	IB10	1Word	IX0.0	CNT State Ch1
			IX0.1	Clear Signal Ch1
			IX0.2	Comp Flag Ch1
			IX0.3	Reserve 0x00
	IX0.4			
	IX0.5			
	IX0.6			
	IX0.7			
	IX1.0			
	IX1.1			
	IX1.2			
	IX1.3			
	IX1.4			
	IX1.5			
	IX1.6			
	IX1.7			
12	IB12	1Word	CNT Value[16..31] Ch1	
	IB13			
13	IB14	1Word	CNT Value[0..15] Ch1	
	IB15			
14	IB16	1Word	Latch Value[16..31] Ch1	
	IB17			
15	IB18	1Word	Latch Value[0..15] Ch1	
	IB19			

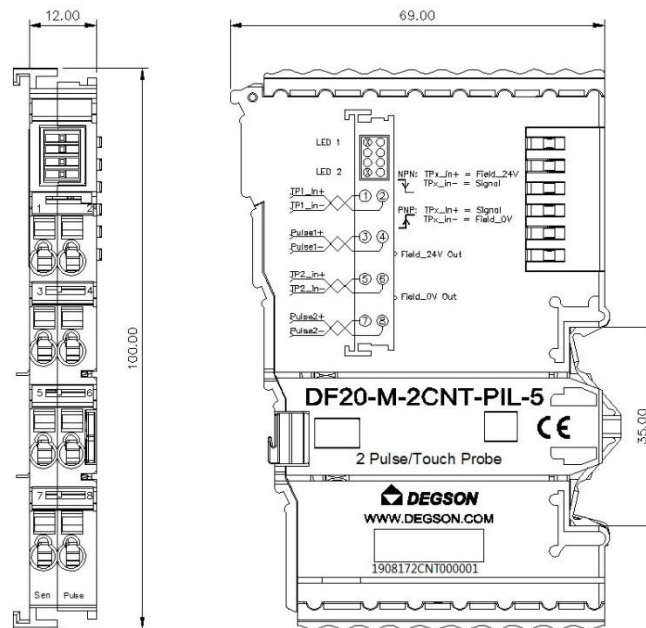
➤ Description of process data.

Name	Meaning	Outputting process data	Description
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1: Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1: Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated. 1: Enable channel 1 compare value
Comp Value[16..31] Ch0	Channel 1 comparison value 16 bits high [QB3 QB2]	Low byte storage: QB2	Bit16~bit23
		High byte storage: QB3	Bit24~bit31
Comp Value[0..15] Ch0	16 bits below the channel 1 comparison value [QB5 QB4]	Low byte storage: QB4	bit0~bit7
		High byte storage: QB5	bit8~bit15
CNT Ctl Ch1	second channel status word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1: Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1: Enable channel 2 compare value
Comp Value[16..31] Ch1	Channel 2 comparison value 16 bits high [QB9 QB8]	Low byte storage: QB8	Bit16~bit23
		High byte storage: QB9	Bit24~bit31
Comp Value[0..15] Ch1	16 bits below the channel 2 comparison value [QB11 QB10]	Low byte storage: QB10	bit0~bit7
		High byte storage: QB11	bit8~bit15
Name	Meaning	Input process data	Description
CNT State Ch0	First channel count status	IX0.0	0: Channel 1 stop counting. 1: Channel 1 starts counting
Clear Signal Ch0	first channel electronic probe/count clear signal	IX0.1	0: no channel 1 electron probe signal. 1: with channel 1 electron probe signal
Comp Flag Ch0	The first channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB3 IB2]	Low byte storage: IB2	Bit16~bit23
		High byte storage: IB3	Bit24~bit31
CNT Value[0..15] Ch0	The lower 16 bits of the channel	Low byte	bit0~bit7

	1 count value [IB5 IB4]	storage:IB4	
		High byte storage:IB5	bit8~bit15
Latch Value[16..31]Ch0	Channel 1 latch value high 16 bits [IB7 IB6]	Low byte storage:IB6	Bit16~bit23
		High byte storage:IB7	Bit24~bit31
Latch Value[0..15] Ch0	Lower 16 bits of channel 1 latch value [IB9 IB8]	Low byte storage:IB8	bit0~bit7
		High byte storage:IB9	bit8~bit15
CNT State Ch1	second channel counting status	IX0.0	0: Channel 2 stop counting. 1: Channel 2 starts counting
Clear Signal Ch1	second channel electronic probe/count clear signal	IX0.1	0: no channel 2 electron probe signal. 1: with channel 2 electron probe signal
Comp Flag Ch1	The second channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch1	Channel 2 count value 16 bits high [IB13 IB12]	Low byte storage:IB12	Bit16~bit23
		High byte storage:IB13	Bit24~bit31
CNT Value[0..15] Ch1	Channel 2 count value is 16 bits lower [IB15 IB14]	Low byte storage:IB14	bit0~bit7
		High byte storage:IB15	bit8~bit15
Latch Value[16..31]Ch1	Channel 2 latch value 16 bits high [IB17 IB16]	Low byte storage:IB16	Bit16~bit23
		High byte storage:IB17	Bit24~bit31
Latch Value[0..15] Ch1	Channel 2 latch value 16 bits lower [IB19 IB18]	Low byte storage:IB18	bit0~bit7
		High byte storage:IB19	bit8~bit15

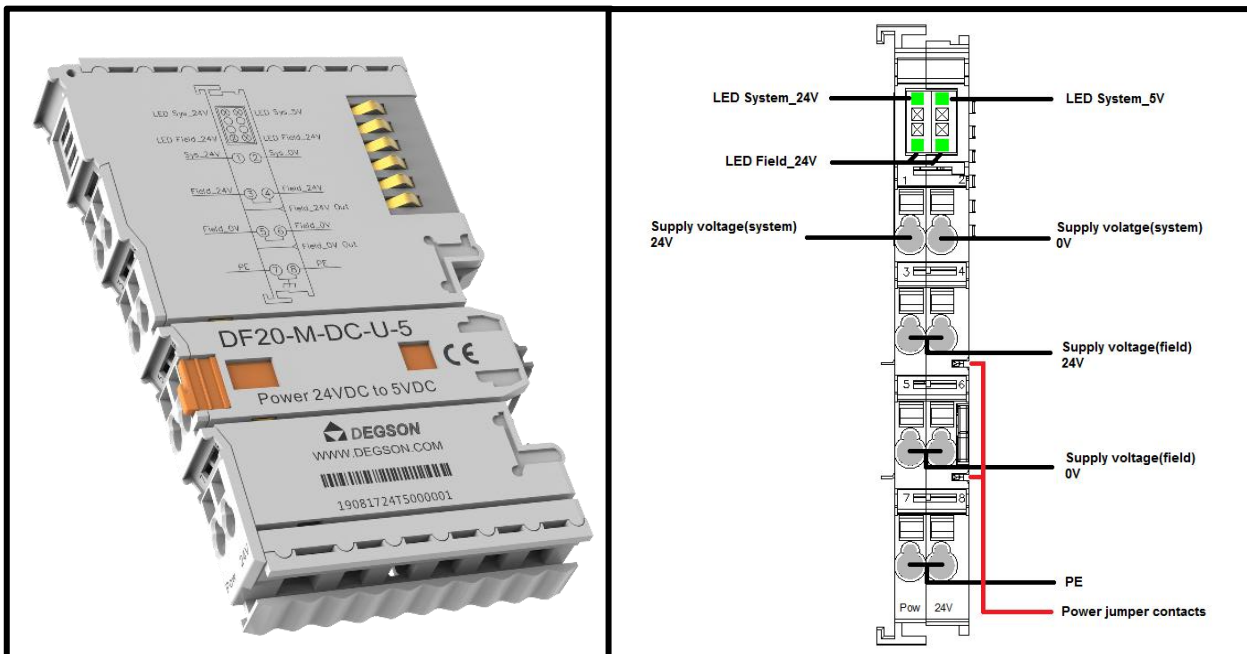
4. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



24VDC to 5VDC/0.75A isolation (DF20-M-DC-U-5)

- The operating voltage of 5VDC is provided for the I/O module through the module's internal bus.
- Provides internal system current 0.75A.
- Provides 24VDC rated voltage to external sites.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- Electrical isolation between the field level and the system level.
- The protection grade is IP20.

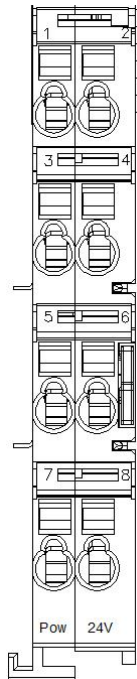


1. Specification parameters

technical information	
Number of channels	1
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
providing internal system voltage	5VDC
Providing internal system current	Max. 0,75A
Providing field voltages that	24VDC 20%/ -15%
Providing the maximum current in the field, the	5A
Isolation	500V system/site electrical isolation
reverse circuit protection	Yes
Indicator light	4 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

2. hardware interface

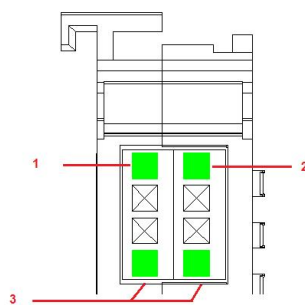
Wiring Terminal Definition



terminal serial number	Signal	Description
1	System power supply 24V	Power the module internally and provide 5V voltage to the gold finger.
2	System power 0V	
3	On-site power supply 24V	supplying power to the field-side loads
4		
5	On-site power supply 0V	
6		
7	Grounding	module grounding
8		

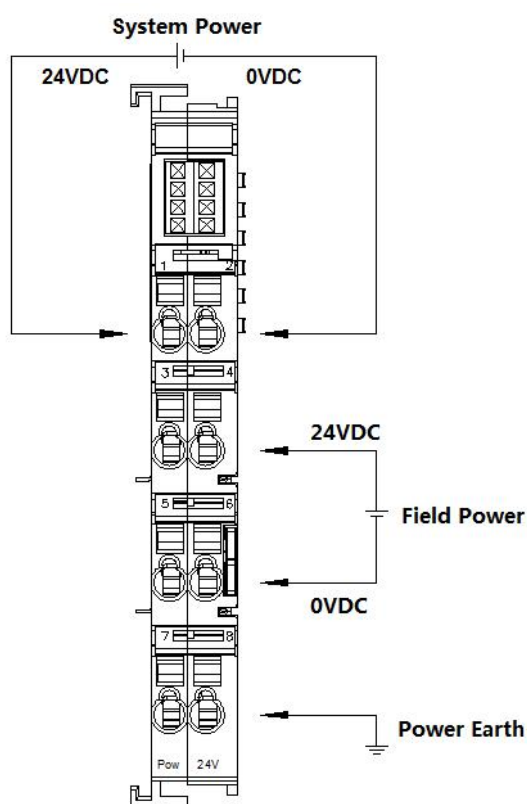
Note: It is recommended to use two mutually isolated 24V power supplies to provide 2 power supplies for the module to achieve optimal anti-interference performance.

LED indicator definition



LED indicator light	State	Meaning
1	The green light is always on	The power supply to the module is normal
	Green light out	Abnormal power supply to the module
2	The green light is always on	5V power supply at golden finger is normal
	Green light out	Abnormal 5V power supply at golden finger
3	The green light is always on	The power supply to the load is normal
	Green light out	Abnormal power supply to the load

Wiring Diagram

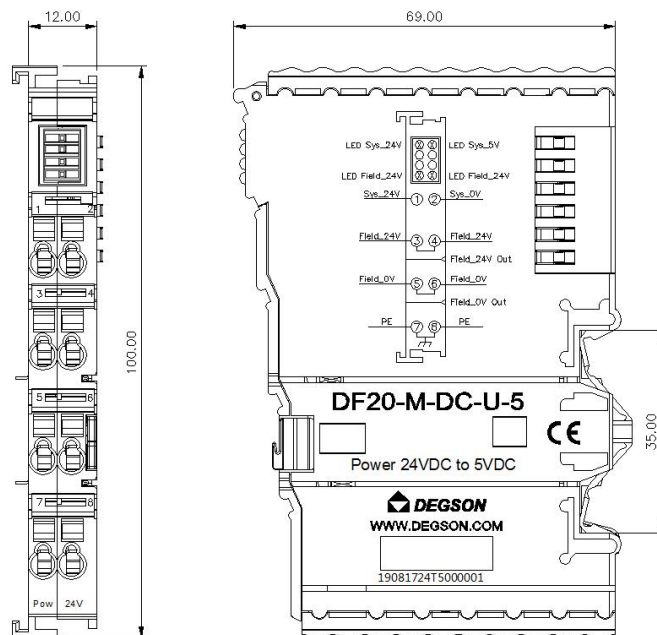


As shown in the picture

Ports 3 and 4 are internally shorted; ports 5 and 6 are internally shorted; and ports 7 and 8 are internally shorted. Therefore, only three of the ports need to be connected when wiring.

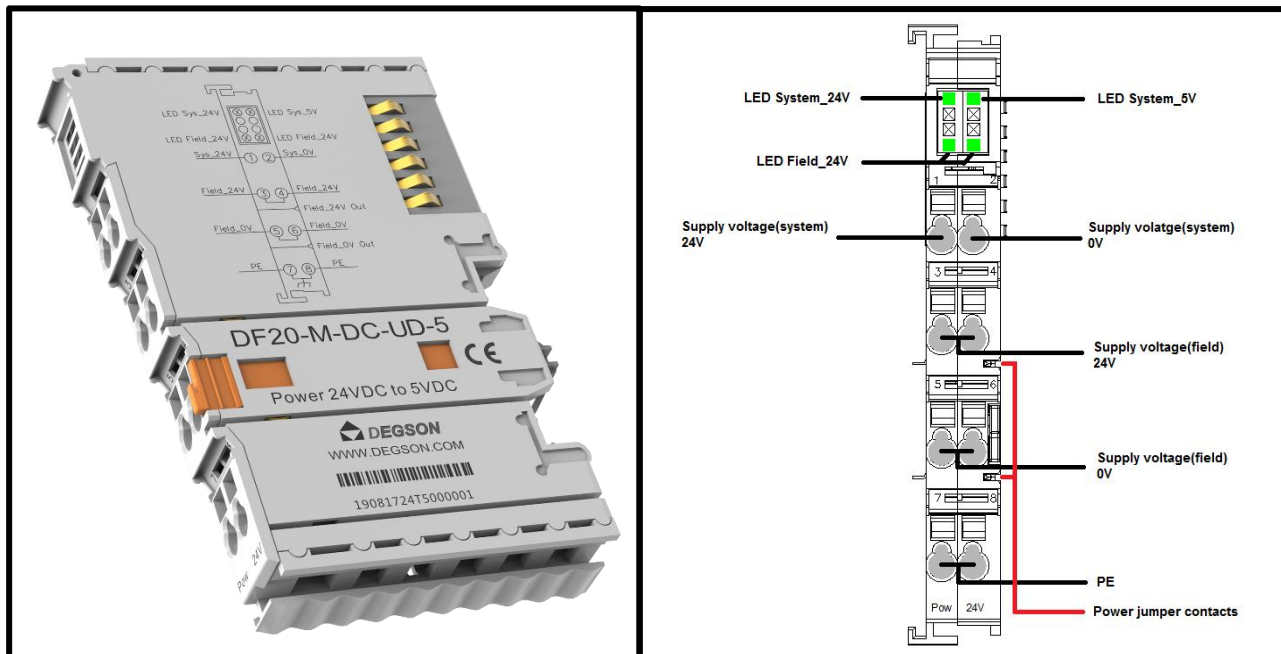
3. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



24VDC to 5VDC/2A non isolated (DF20-M-DC-UD-5)

- The operating voltage of 5VDC is provided for the I/O module through the module's internal bus.
- Provides internal system current 2A
- Provides 24VDC rated voltage to external sites.
- The two LED indicators indicate that the module is operating normally and communication is normal.
- There is no isolation between the field level and the system level.
- The protection grade is IP20.

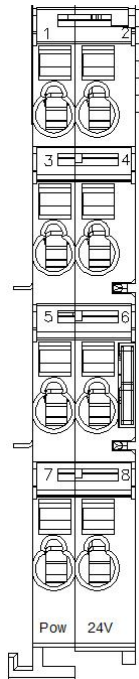


1. Specification parameters

technical information	
Number of channels	1
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
providing internal system voltage	5VDC
Providing internal system current	Max. 2A
Providing field voltages that	24VDC 20%/ -15%
Providing the maximum current in the field, the reverse circuit protection	8A Yes
Indicator light	4 x LED green
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	8 x Cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~2.5mm ² /28~14AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H2S pollutant concentration at 75% relative humidity	10ppm
Allowable SO2 pollutant concentration at 75% relative humidity	25ppm

2. hardware interface

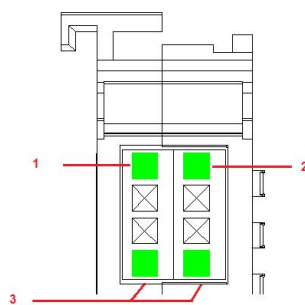
Wiring Terminal Definition



terminal serial number	Signal	Description
1	System power supply 24V	Power the module internally and provide 5V voltage to the gold finger.
2	System power 0V	
3	On-site power supply 24V	supplying power to the field-side loads
4		
5	On-site power supply 0V	
6		
7	Grounding	module grounding
8		

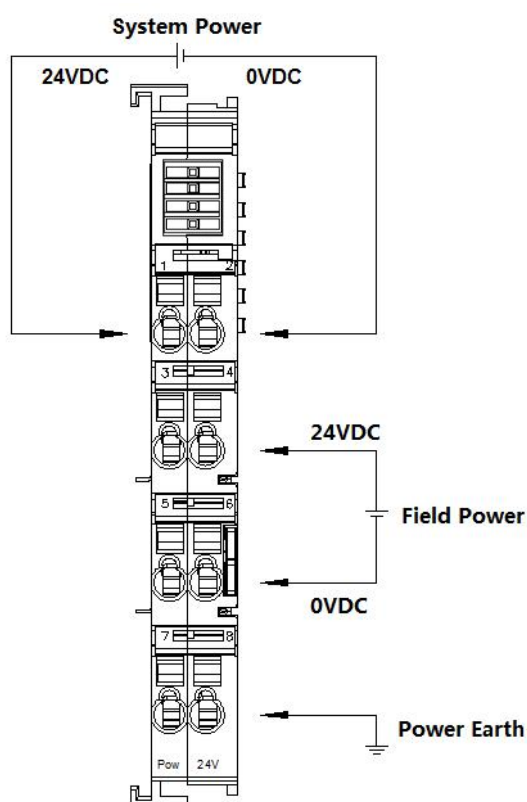
Note: It is recommended to use two mutually isolated 24V power supplies to provide 2 power supplies for the module to achieve optimal anti-interference performance.

LED indicator definition



LED indicator light	State	Meaning
1	The green light is always on	The power supply to the module is normal
	Green light out	Abnormal power supply to the module
2	The green light is always on	5V power supply at golden finger is normal
	Green light out	Abnormal 5V power supply at golden finger
3	The green light is always on	The power supply to the load is normal
	Green light out	Abnormal power supply to the load

Wiring Diagram

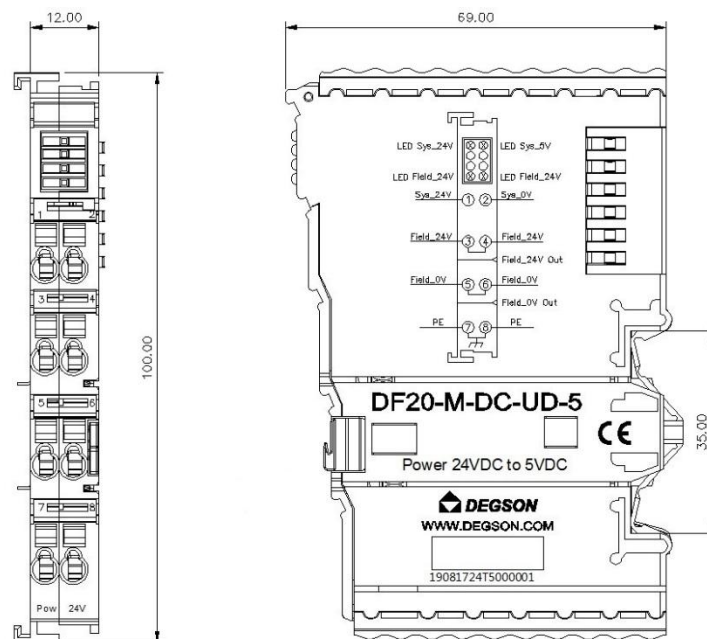


As shown in the picture

Ports 3 and 4 are internally shorted; ports 5 and 6 are internally shorted; and ports 7 and 8 are internally shorted. Therefore, only three of the ports need to be connected when wiring.

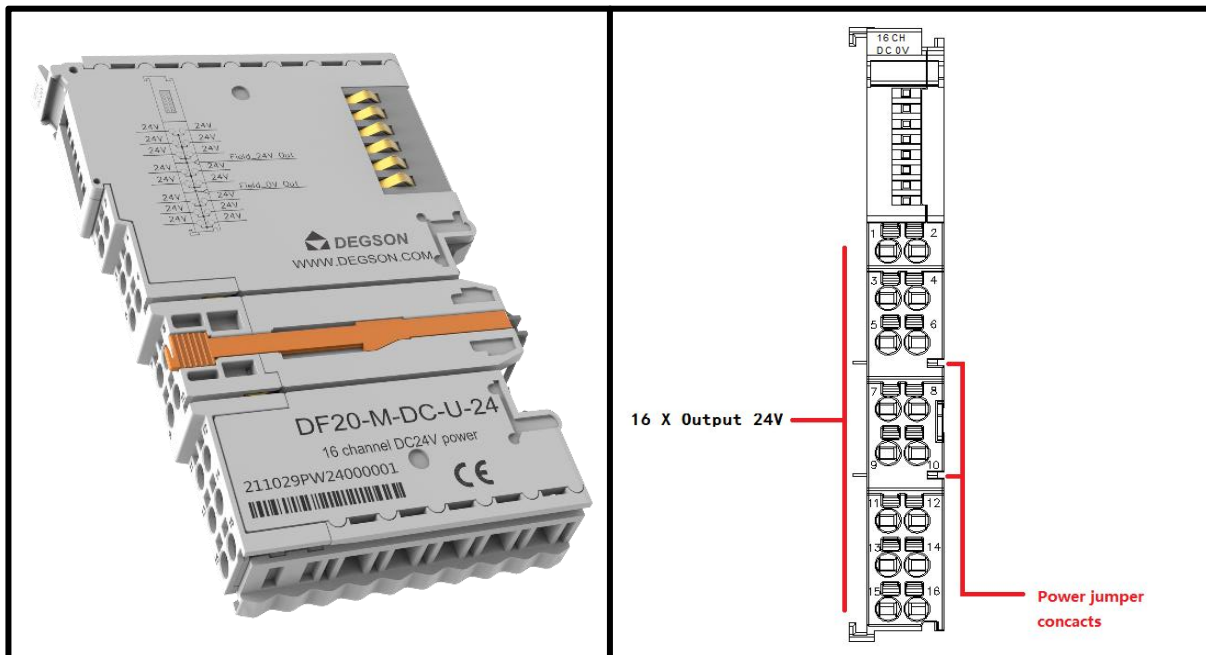
3. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channels/24VDC/voltage distribution (DF20-M-DC-U-24)

- Independent of the fieldbus application and connection type.
- Provides 16 channels of 24VDC rated voltage for external sites.
- The protection grade is IP20.

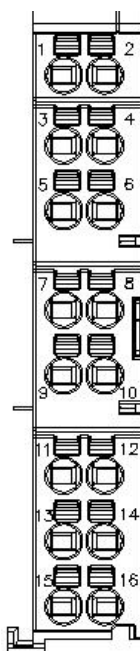


1. Specification parameters

technical information	
Number of channels	16
Operating voltage	24VDC (- 15%~+20%) passes through the power supply across the contact point
Providing field voltages that	24VDC (-15%~+20%)
Providing the maximum current in the field, the	5A
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

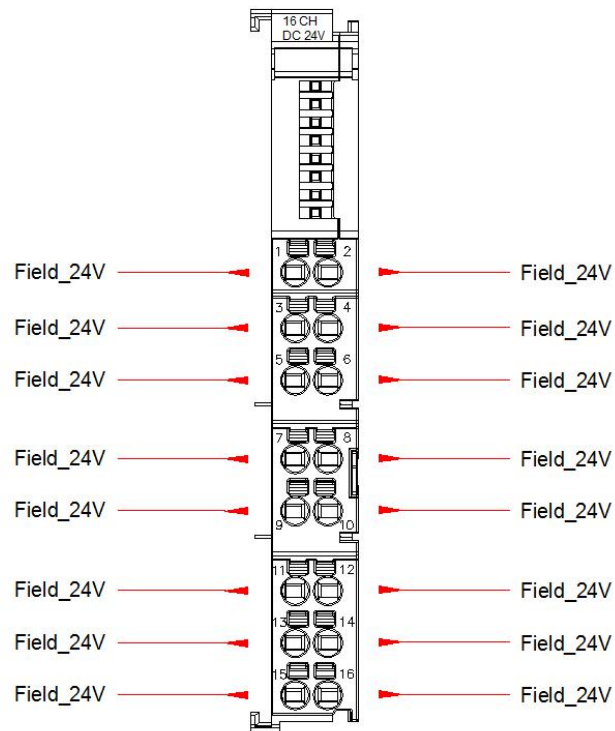
2. hardware interface

Wiring Terminal Definition



terminal serial number		Signal	Description
1	2	On-site power supply 24VDC	Provides 16 channels of 24VDC rated voltage to external loads
3	4		
5	6		
7	8		
9	10		
11	12		
13	14		
15	16		

Wiring Diagram

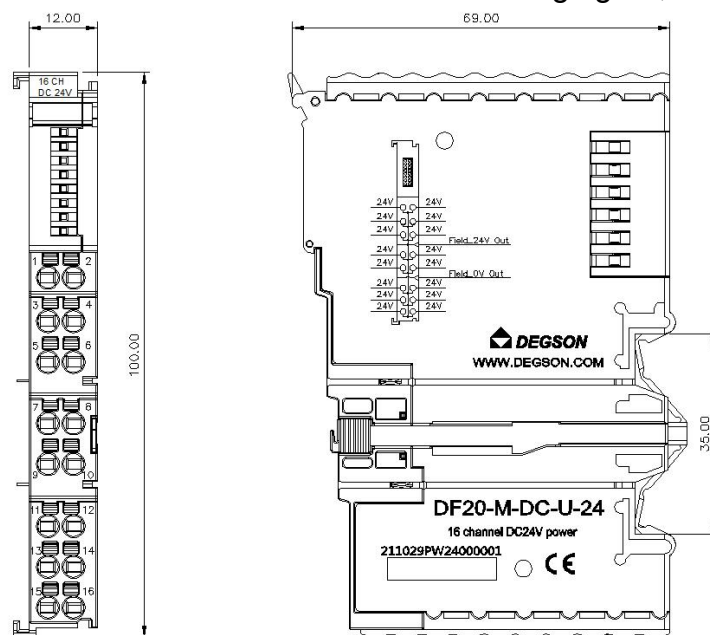


As shown in the picture.

Each of the 16 channels can provide 24VDC rated voltage for external loads.

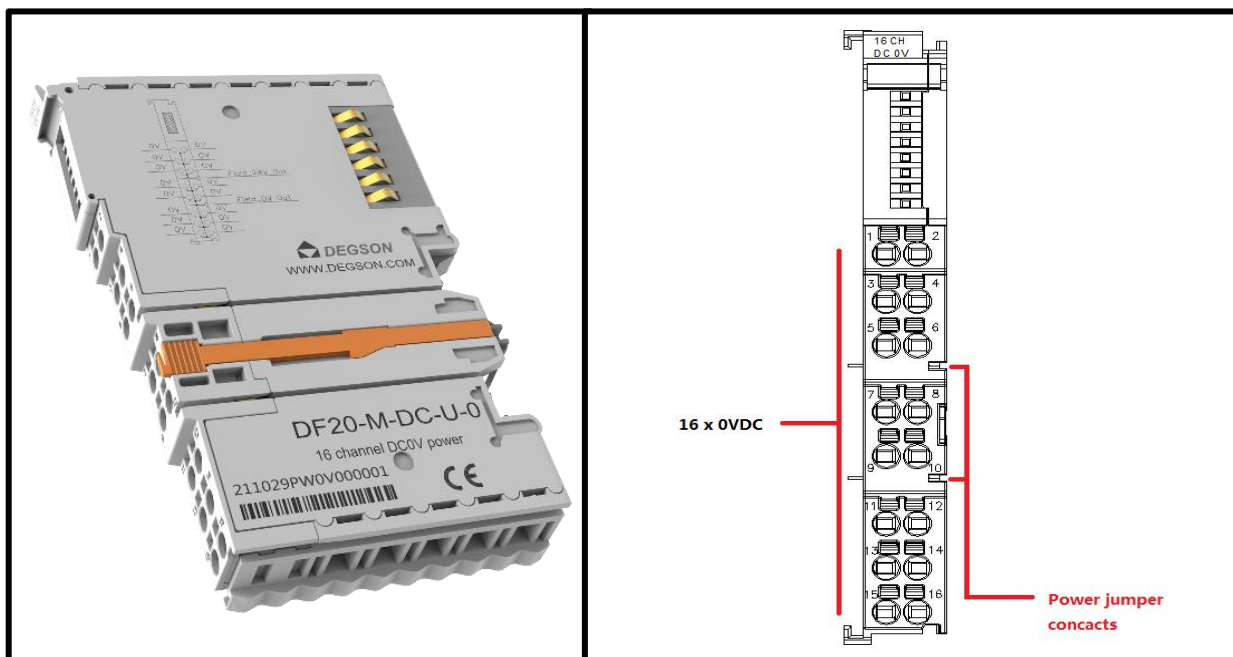
3. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



16 channel/0VDC/voltage distribution (DF20-M-DC-U-0)

- Independent of the fieldbus application and connection type.
- Provides 16 channels of 0VDC rated voltage to external sites.
- The protection grade is IP20.

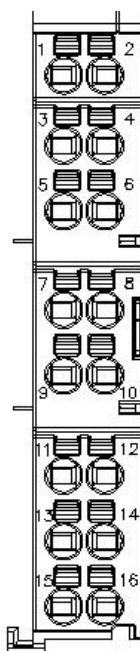


1. Specification parameters

technical information	
Number of channels	16
Operating voltage	0VDC across the power supply contacts
Providing field voltages that	0VDC
Providing the maximum current in the field, the	5A
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

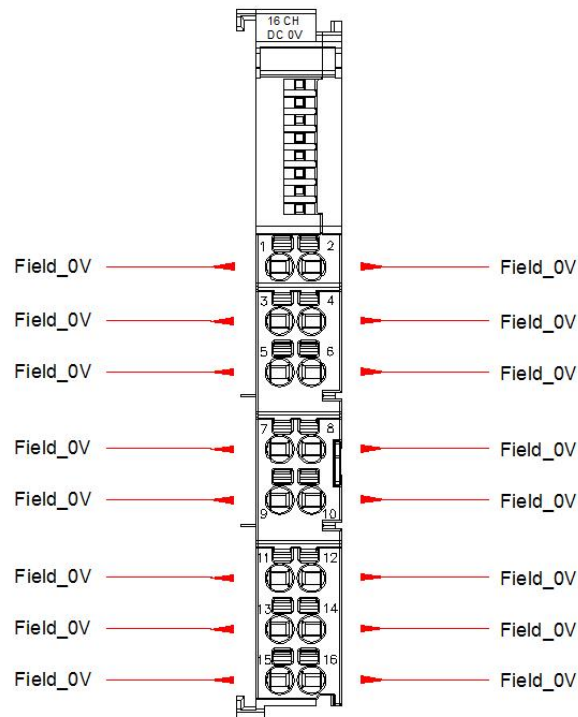
2. hardware interface

Wiring Terminal Definition



terminal serial number		Signal	Description
1	2	On-site power supply 0VDC	Provides 16 channels of 0VDC rated voltage to external loads
3	4		
5	6		
7	8		
9	10		
11	12		
13	14		
15	16		

Wiring Diagram

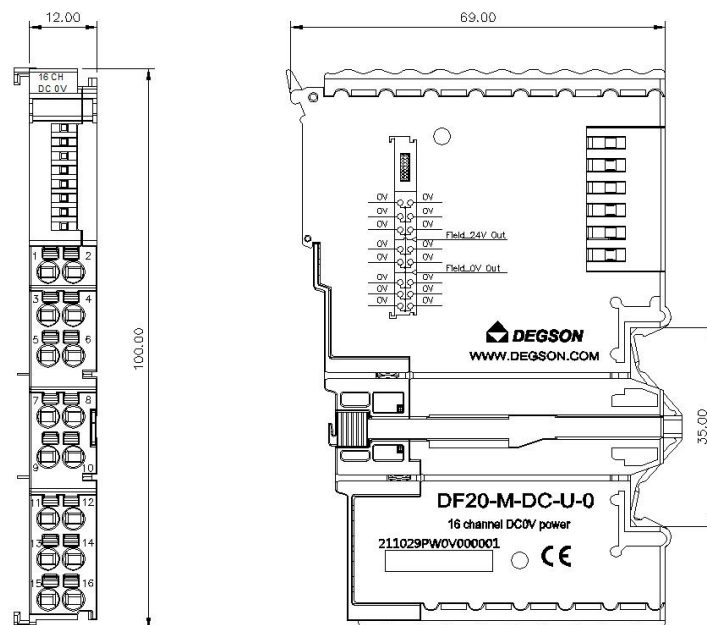


As shown in the picture.

Each of the 16 channels can provide 0VDC rated voltage for external loads.

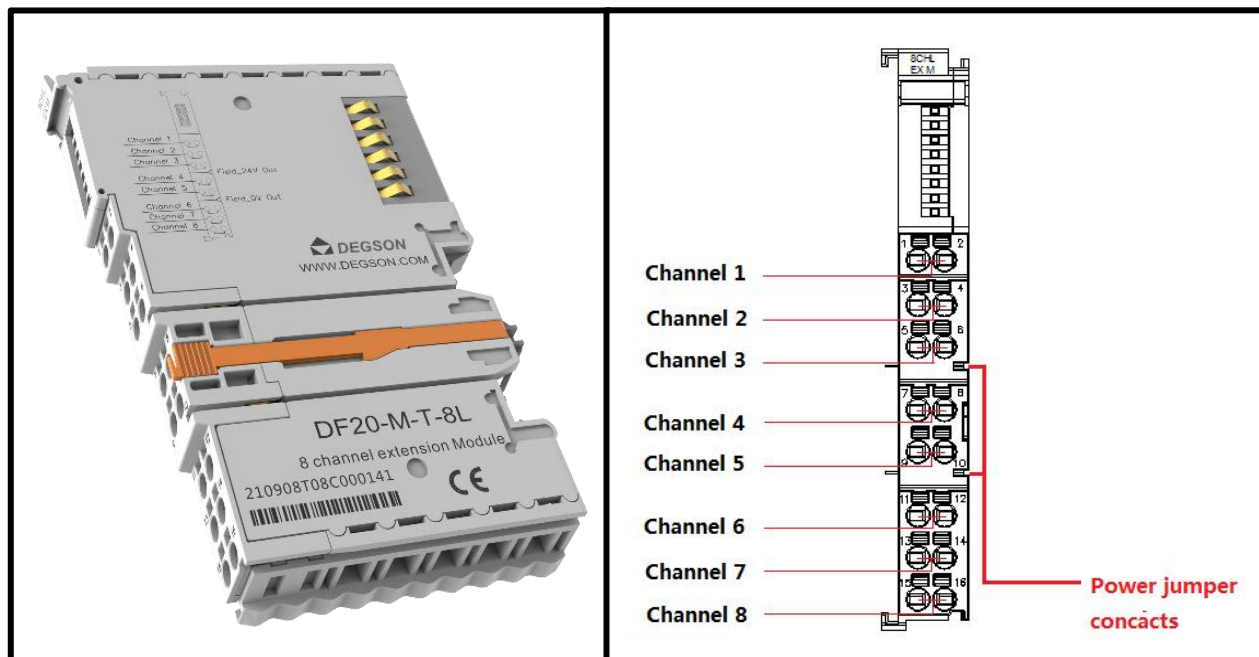
3. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



8-channel/2-wire extension/voltage distribution (DF20-M-T-8L)

- Independent of the fieldbus application and connection type.
- Provides 8-channel 2-wire expansion for external sites.
- The protection grade is IP20.

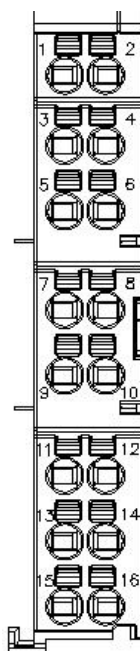


1. Specification parameters

technical information	
Number of channels	8
Operating voltage	0V~36VDC
Providing field voltages that	Voltage distribution
Providing the maximum current in the field, the	5A
Number of input power trans-contacts that	2
Number of external power supply cross-contacts that	2
wiring parameters	
Connection technology: inputs/outputs	16 x cage spring terminal blocks
Type of connection (1)	Input/Output
the crimped area of the conductor	0.2~1.5mm ² /28~16AWG
Stripped wire length	8~9mm/0.31~0.35inches
mounting method	DIN-35 guide rail
material parameters	
Colors	Light gray
housing material	PC plastic, PA66
Consistency markers	CE
environmental requirements	
Permissible ambient temperature (operating)	-25~60°C
Permissible ambient temperature (storage)	-40~85°C
type of protection	IP20
Pollution level (5)	2. Comply with IEC 61131-2 standard
working altitude	No temperature derating: 0~2000m
mounting position	Arbitrary
Relative humidity (non-condensing)	5~95%RH
vibration-resistant	4g, according to IEC 60068-2-6
Impact resistance	15g, in accordance with IEC 60068-2-27
EMC - Immunity	Conform to EN 61000-6-2
EMC—radiated interference	Conform to EN 61000-6-3
corrosion resistance	Comply with IEC 60068-2-42 and IEC 60068-2-43
Allowable H ₂ S pollutant concentration at 75% relative humidity	10ppm
Allowable SO ₂ pollutant concentration at 75% relative humidity	25ppm

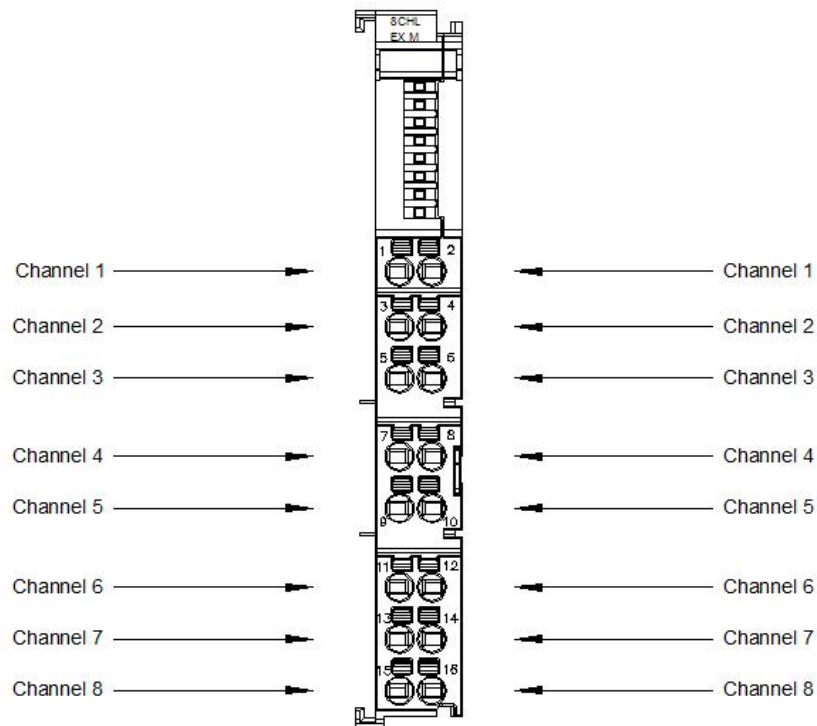
2. hardware interface

Wiring Terminal Definition



terminal serial number		Signal	Description
1	2	Extended Channel 1	Provides 8-channel, 2-wire expansion for external sites
3	4	Extended Channel 2	
5	6	Extended Channel 3	
7	8	Expansion Channel 4	
9	10	Extended Channel 5	
11	12	Expansion Channel 6	
13	14	Extended Channel 7	
15	16	Expansion Channel 8	

Wiring Diagram

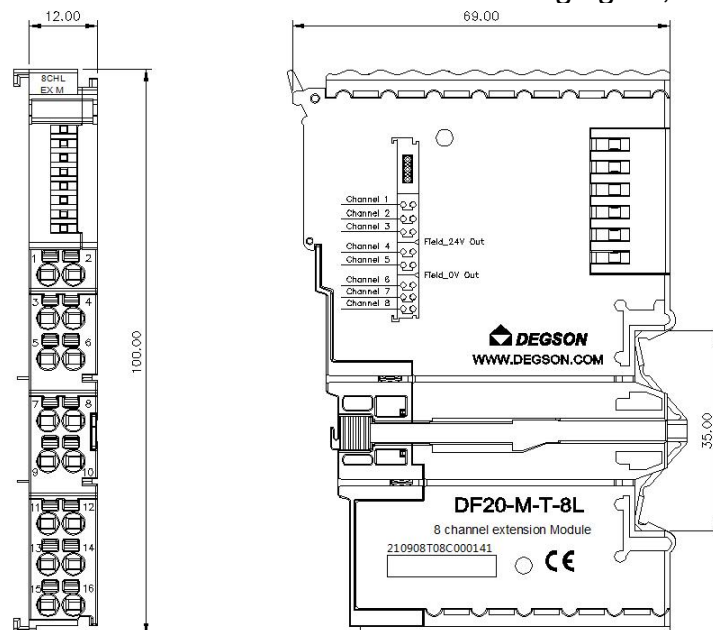


As shown in the picture.

Provides 8-channel, 2-wire expansion for external sites for easy routing.

3. Mechanical installations

The installation dimension information is shown in the following figure, in mm:



4. Example of a newsletter

4.1. web page configuration

- ModbusTCP adapter web configuration can quickly and conveniently configure the ModbusTCP remote IO application system in the application.

It has modules such as network information maintenance, adapter information maintenance, and I/O module information maintenance.

- The running priority of Modbus configuration is higher than the web configuration. Before using the web page to manage and configure the ModbusTCP adapter, the Modbus configuration must be stopped. For example, disconnecting or closing the Modbus Poll software in the Modbus Poll software will stop the Modbus configuration. of operation.

1.1 Introduction to the web interface

- Enter the IP address of the ModbusTCP adapter in the browser address bar to enter the home page of the configuration web page, for example

The ModbusTCP adapter IP address is 192.168.1.254.

- On the homepage, some information and each I/O module management configuration entrance are displayed, as shown in the figure below.
- In area 1, you can observe and set network information, including MAC address (read-only), IP address (read-write), subnet mask (read-write)

Gateway (readable and writable) and configure disconnection output attributes (clear output or maintain output). Please set the DIP switch to 0 before modifying the information in this area.

Modifying the information in this area will trigger the adapter to reset. Wait for a certain period of time. It will automatically jump to a new web page after a while (provided that the network information newly configured into the adapter is in the same network segment as the current configuration PC. If not, the network segment of the configuration PC needs to be reset).

- Coupler information can be observed in Zone 2, including the coupler name and firmware version (read-only).
- In area 3, you can observe the configuration sequence of the I/O modules and the

management configuration entry of each I/O module. A total of 32 modules can be supported.

Network Info

MAC Address: 02:D4:11:C4:8A:11
IP Address: 192.168.1.254
Subnet mask: 255.255.255.0

GateWay: 192.168.1.1
Output on Fieldbus Error: All outputs off
Save&Restart

Tips: Please set the dial-switch to 0 before submitting!

Coupler Info

Modbus/TCP Coupler
Firmware Version: 1.0.2

I/O Module Info

No.1 DF20-M-1CNT-EL	No.2 DF20-M-1CNT-EL	No.3 DF20-M-2CNT-PIL	No.4 DF20-M-2CNT-PIL
No.5 DF20-M-4AO-U-1	No.6 NONE_MOD	No.7 NONE_MOD	No.8 NONE_MOD
No.9 NONE_MOD	No.10 NONE_MOD	No.11 NONE_MOD	No.12 NONE_MOD
No.13 NONE_MOD	No.14 NONE_MOD	No.15 NONE_MOD	No.16 NONE_MOD
No.17 NONE_MOD	No.18 NONE_MOD	No.19 NONE_MOD	No.20 NONE_MOD
No.21 NONE_MOD	No.22 NONE_MOD	No.23 NONE_MOD	No.24 NONE_MOD
No.25 NONE_MOD	No.26 NONE_MOD	No.27 NONE_MOD	No.28 NONE_MOD
No.29 NONE_MOD	No.30 NONE_MOD	No.31 NONE_MOD	No.32 NONE_MOD

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- If the number of modules used in an application is less than 32, the remaining unused positions will be displayed as NONE_MOD. If you click

[NONE_MOD](#) Click [HomePage](#) to go back to the homepage, and the screen will be displayed as shown below.

Not insert valid module

[HomePage](#)

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- A module or modules used in an application is an unsupported module (not listed in the list of supported modules), then the

Displayed as ERROR_MOD, if you click [ERROR_MOD](#) to enter, the displayed interface is as shown

below. Click [HomePage](#) to return to the home page.

This module is not supported

[HomePage](#)

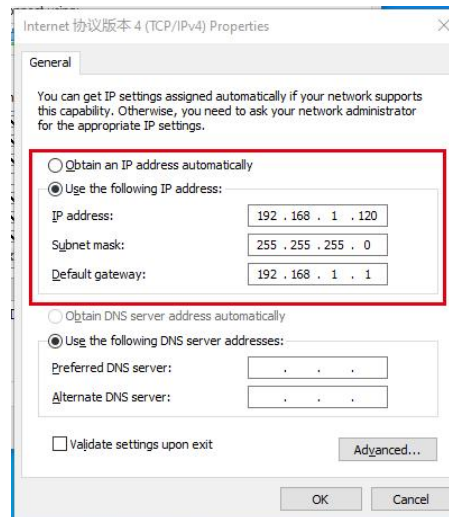
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- If the module application sequence is changed, the entire I/O system needs to be reset by powering on and off again.

4.2. Adapter IP Address Configuration

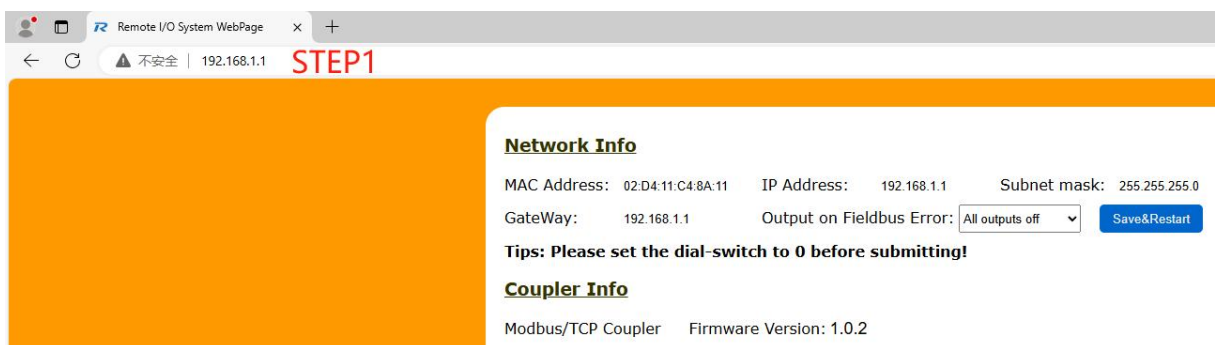
- When leaving the factory, the DIP switch is set to 0, and the IP address is configured as 192.168.1.1. Make sure that the power cord and network cable are all connected properly.

Set the PC network configuration as shown in the figure below, which belongs to the same 192.168.1.xxx network segment as the adapter.



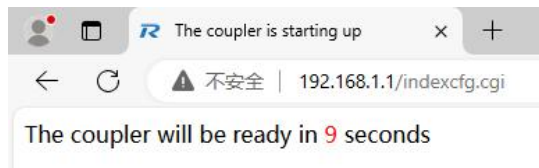
- Power on the adapter, as shown in the following figure, enter 192.168.1.1 in the address bar of the browser to enter the web configuration interface, if you enter the not

If you have lost the web interface, you can disconnect the computer from the network, recharge the adapter, reopen the web page, and connect again.



2.1 Set IP through web page

- **Example 1: Only modify the last byte of the IP and do not modify the network segment. As shown in the figure below, change the adapter IP address to "192.168.1.10", before clicking "Save&Restart", you need to set all 8-digit DIP switches to 0; then after clicking "Save&Restart", the pop-up dialog box will prompt you to set the DIP switches to 0, and continue to click OK. After waiting for 10 seconds, the configuration webpage will automatically jump to reconnect.**



- **Example 2: Modify the adapter network parameters to IP address: 10.0.1.10, subnet mask: 255.255.255.0, default gateway: 10.0.1.1, as shown in the figure below.**



- **After the web interface modification is completed, before clicking "Save&Restart", you need to set all 8-digit DIP switches to 0; then click**

After clicking "Save&Restart", the pop-up dialog box will prompt you to set the DIP switch to 0, and continue to click OK. Because the network segments of the PC and the adapter are

inconsistent, automatic jump and reconnection cannot be performed.

- Set the configuration PC and the adapter to the same network segment, for example, change the IP address of the PC to 10.0.1.201, and power on the adapter again.

Then reopen the browser, enter the IP address of the adapter just configured 10.0.1.10, and the connection is successful.

2.2 Set IP through DIP switch

- The DIP switch can be used to set the last byte of the adapter's IP address, that is, the D byte of the IP address A:B:C:D, the IP address

The A/B/C bytes of the address can only be modified through the web page.

- When the DIP switch is set to 0 or 255, the adapter IP address adopts the IP configured on the web page; when the DIP value is greater than 0 and less than 254

At this time, the last byte D of the adapter's IP is the current dialing value, and the first three bytes are A/B/C configured on the web page.

2.3 Reset IP address

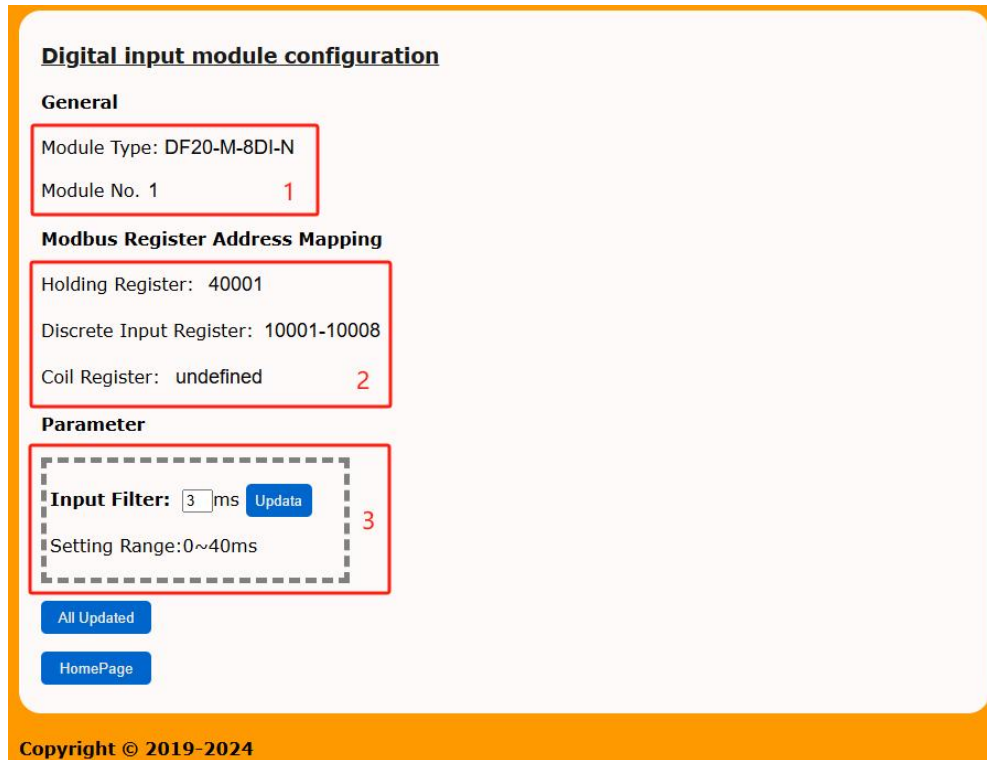
- **When the adapter IP address is lost, forgotten or under other abnormal circumstances, you can set the DIP switch to 254. At this time, the adapter IP address**

The default is 192.168.1.254, through which users can enter the web configuration to reconfigure the network information of the adapter.

- The calculation of the dialing value is detailed in [subchapter II.2](#).

4.3 DF20-M-8DI-N channel configuration

- Clicking on an **DF20-M-8DI-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-8DI-N

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: 10001-10008

Coil Register: undefined

Parameter

Input Filter: 3 ms

Setting Range: 0~40ms

All Updated

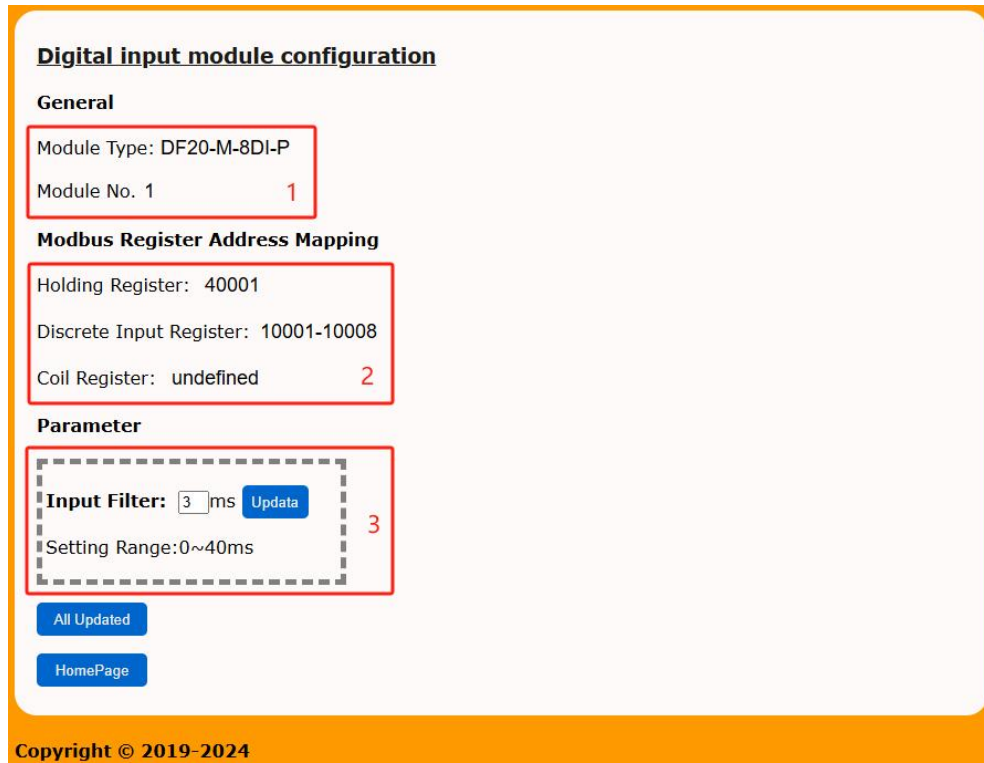
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.4 DF20-M-8DI-P channel configuration

- Clicking on one of the **DF20-M-8DI-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-8DI-P

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: 10001-10008

Coil Register: undefined

Parameter

Input Filter: 3 ms Update

Setting Range: 0~40ms

All Updated

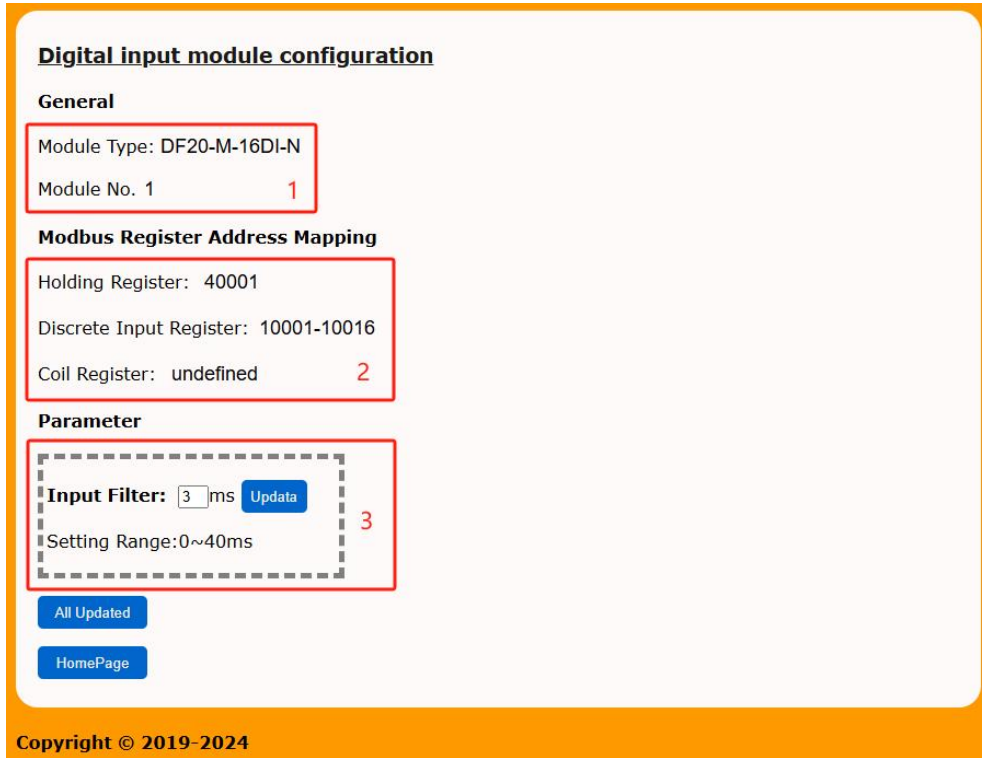
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.5 DF20-M-16DI-N channel configuration

- Clicking on one of the **DF20-M-16DI-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-16DI-N

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: 10001-10016

Coil Register: undefined

Parameter

Input Filter: 3 ms

Setting Range: 0~40ms

All Updated

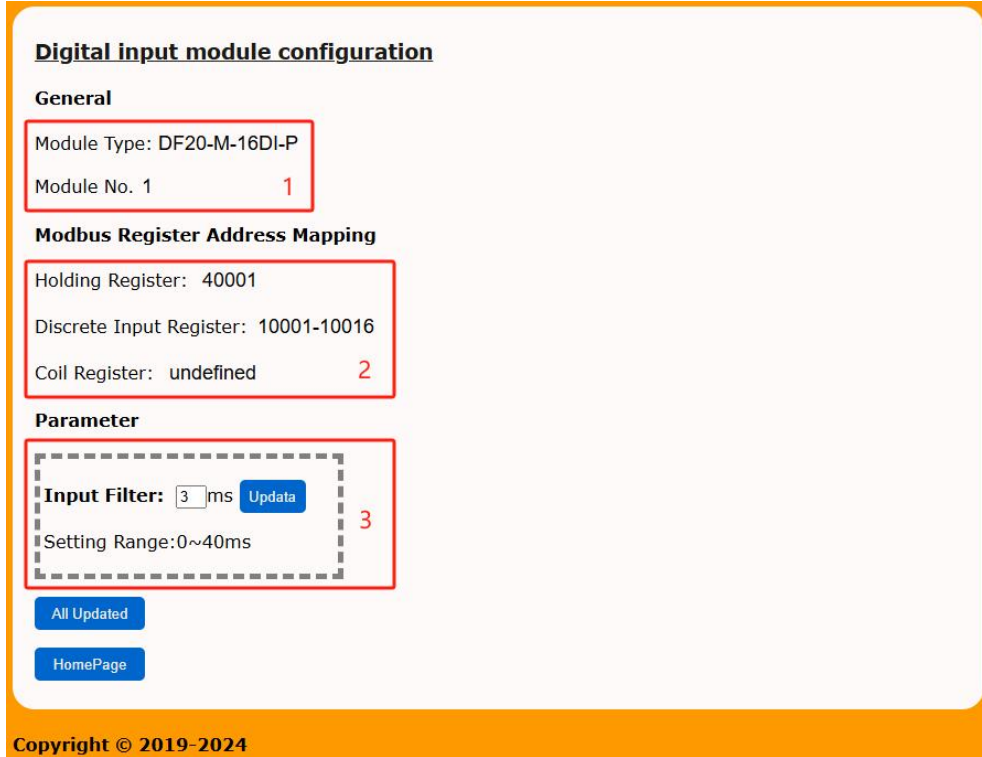
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.6 DF20-M-16DI-P channel configuration

- Clicking on an **DF20-M-16DI-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-16DI-P

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: 10001-10016

Coil Register: undefined

Parameter

Input Filter: 3 ms

Setting Range: 0~40ms

All Updated

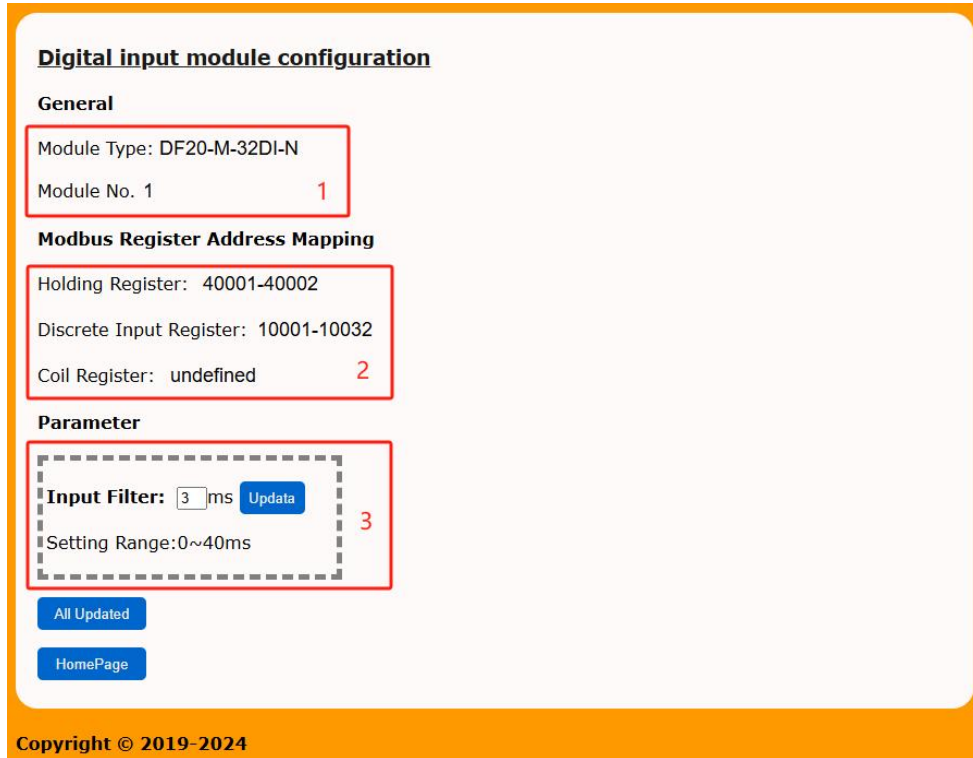
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.7 DF20-M-32DI-N channel configuration

- Clicking on an **DF20-M-32DI-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-32DI-N

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001-40002

Discrete Input Register: 10001-10032

Coil Register: undefined

Parameter

Input Filter: 3 ms Update

Setting Range: 0~40ms

All Updated

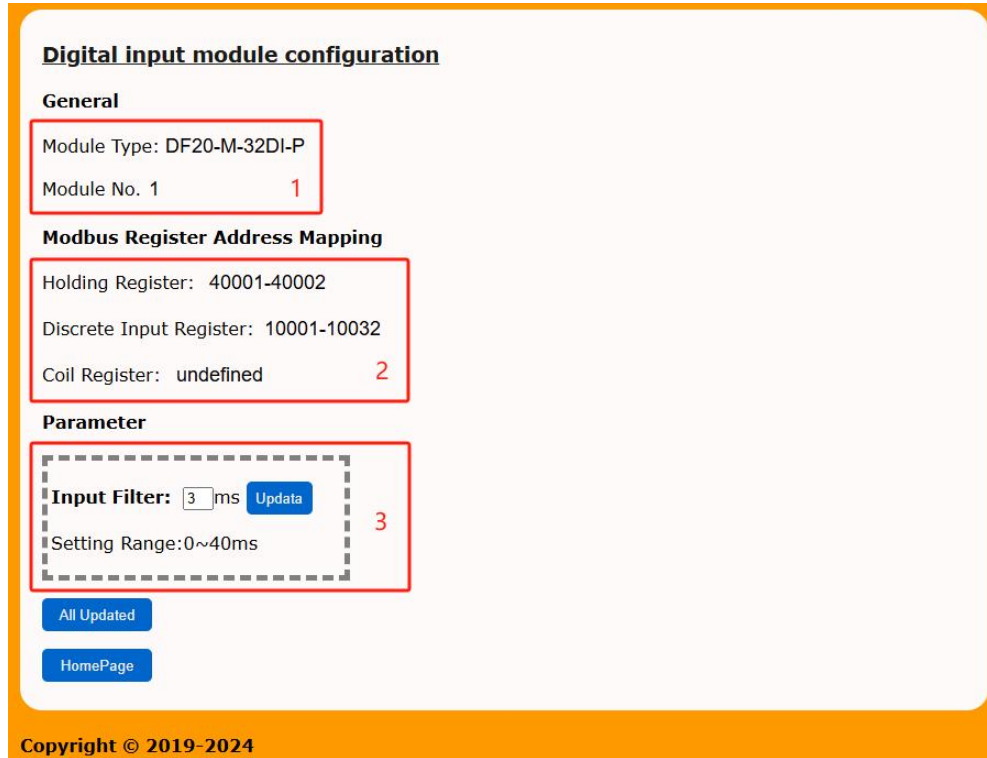
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.8 DF20-M-32DI-P channel configuration

- Clicking on an **DF20-M-32DI-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-32DI-P

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001-40002

Discrete Input Register: 10001-10032

Coil Register: undefined

Parameter

Input Filter: 3 ms [Update](#)

Setting Range: 0~40ms

[All Updated](#)

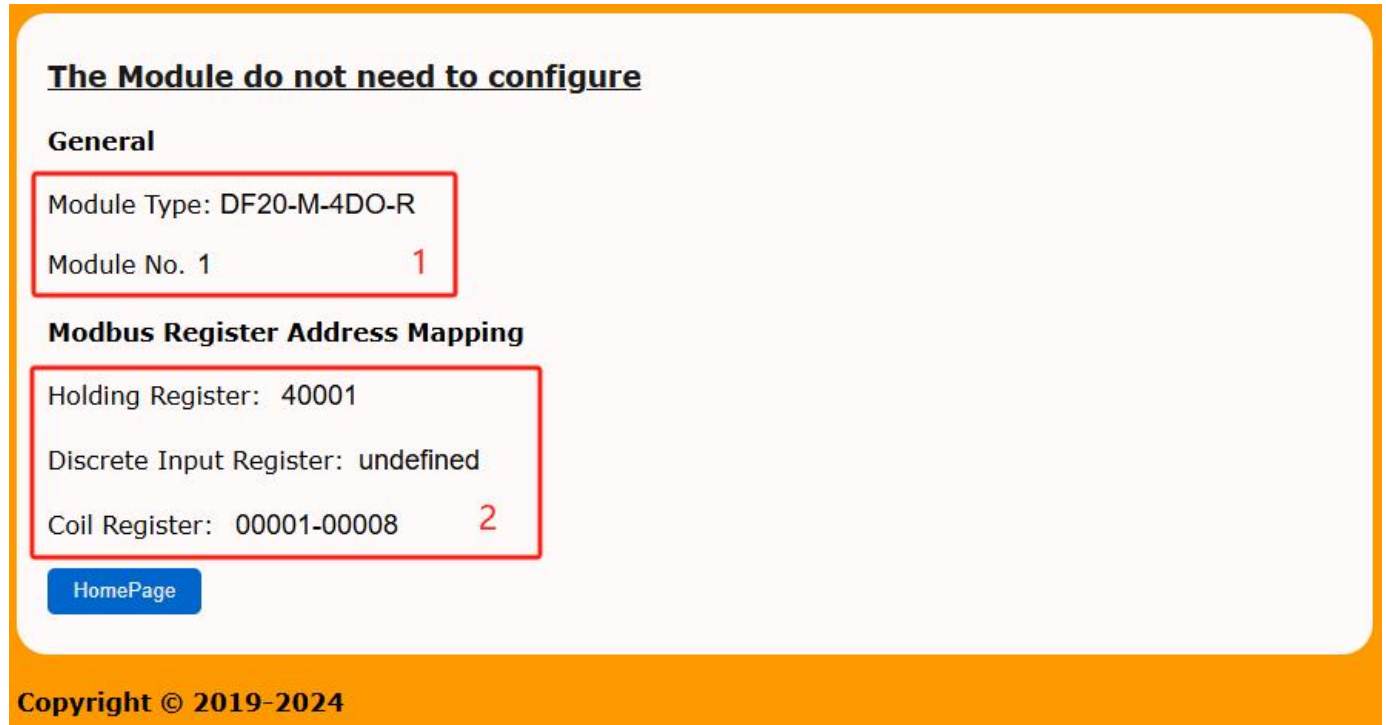
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.9 DF20-M-4DO-R channel configuration

- Clicking on an **DF20-M-4DO-R** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-4DO-R

Module No. 1 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: undefined

Coil Register: 00001-00008 2

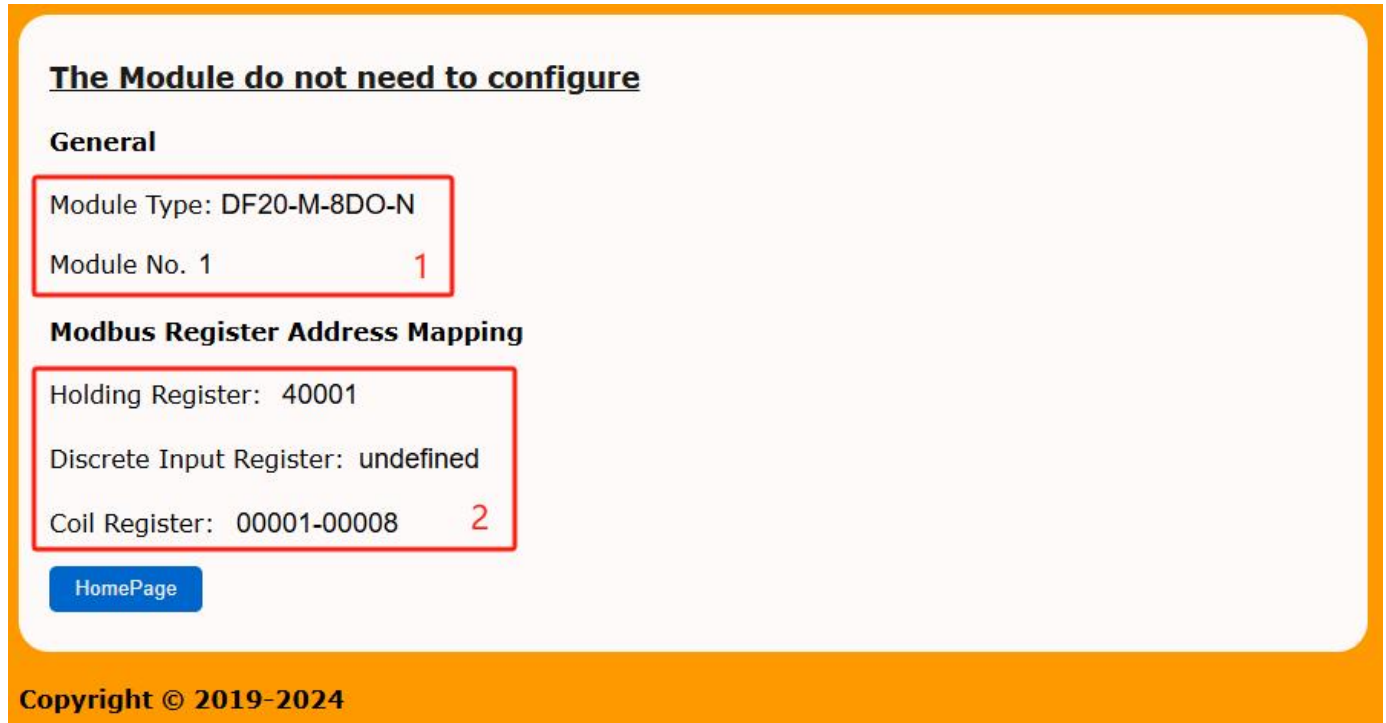
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.10 DF20-M-8DO-N channel configuration

- Clicking on an **DF20-M-8DO-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-8DO-N

Module No. 1 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: undefined

Coil Register: 00001-00008 2

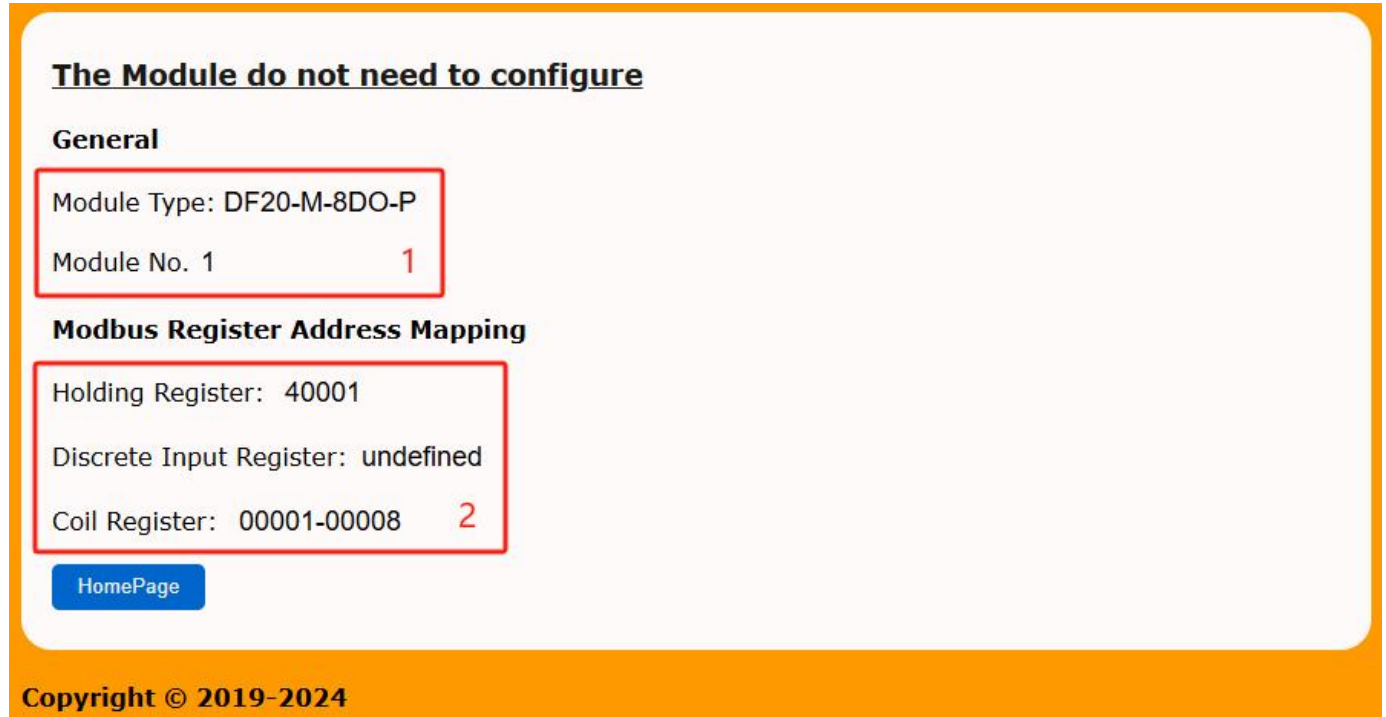
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.11 DF20-M-8DO-P channel configuration

- Clicking on an **DF20-M-8DO-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-8DO-P

Module No. 1 1

Modbus Register Address Mapping

Holding Register: 40001

Discrete Input Register: undefined

Coil Register: 00001-00008 2

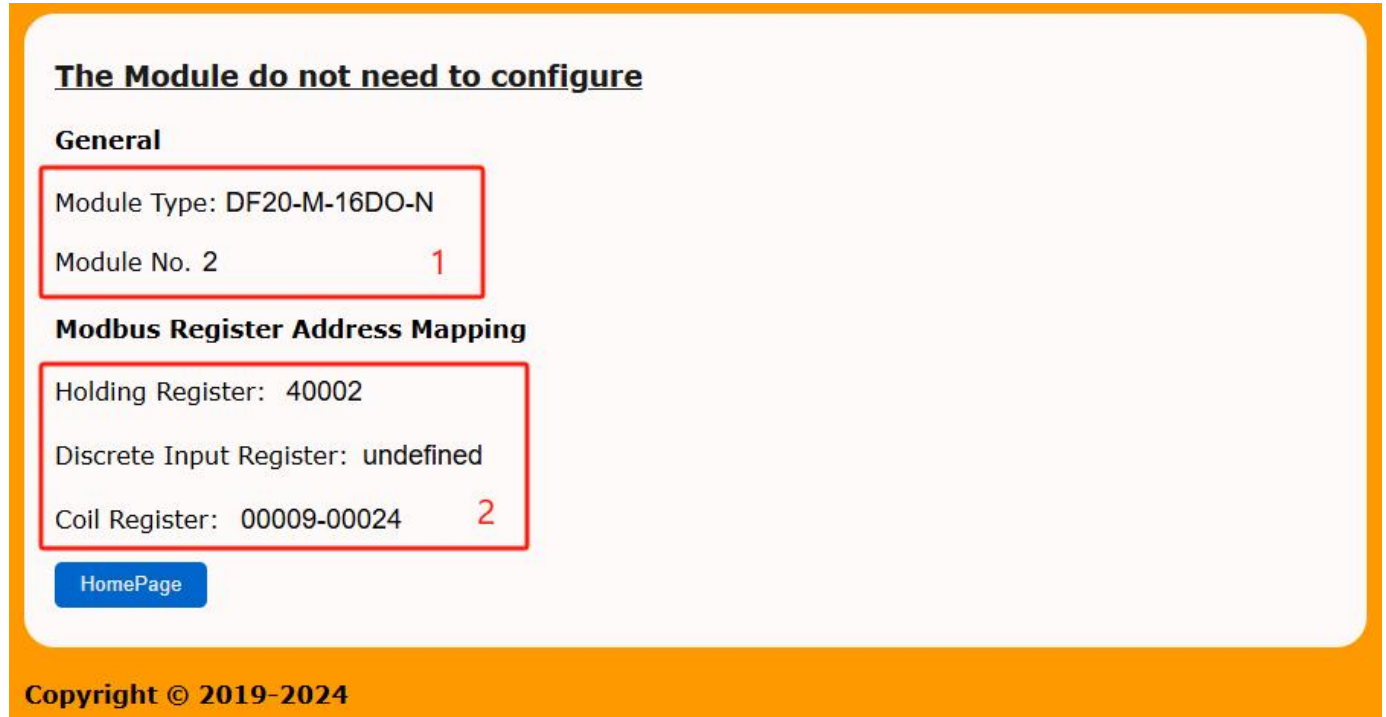
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.12 DF20-M-16DO-N channel configuration

- Clicking on an **DF20-M-16DO-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-16DO-N

Module No. 2 1

Modbus Register Address Mapping

Holding Register: 40002

Discrete Input Register: undefined

Coil Register: 00009-00024 2

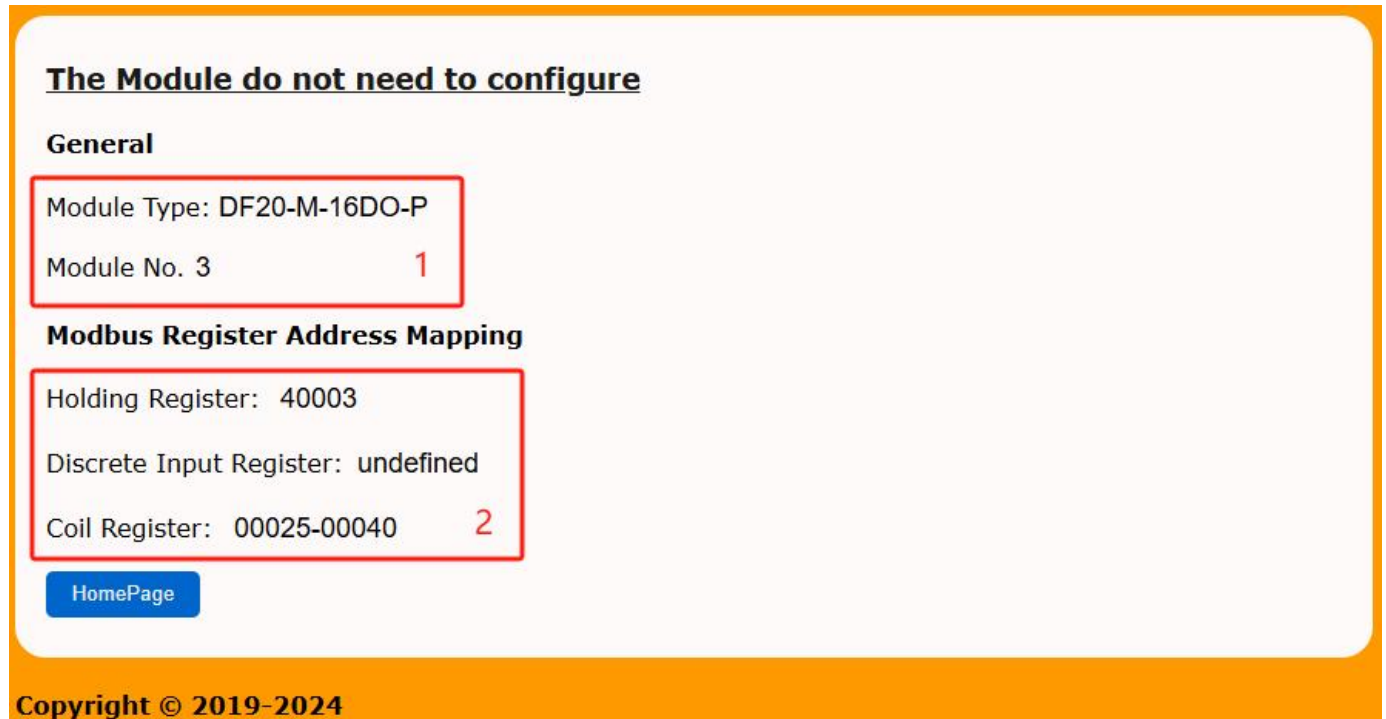
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.13 DF20-M-16DO-P channel configuration

- Clicking on an **DF20-M-16DO-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-16DO-P

Module No. 3 1

Modbus Register Address Mapping

Holding Register: 40003

Discrete Input Register: undefined

Coil Register: 00025-00040 2

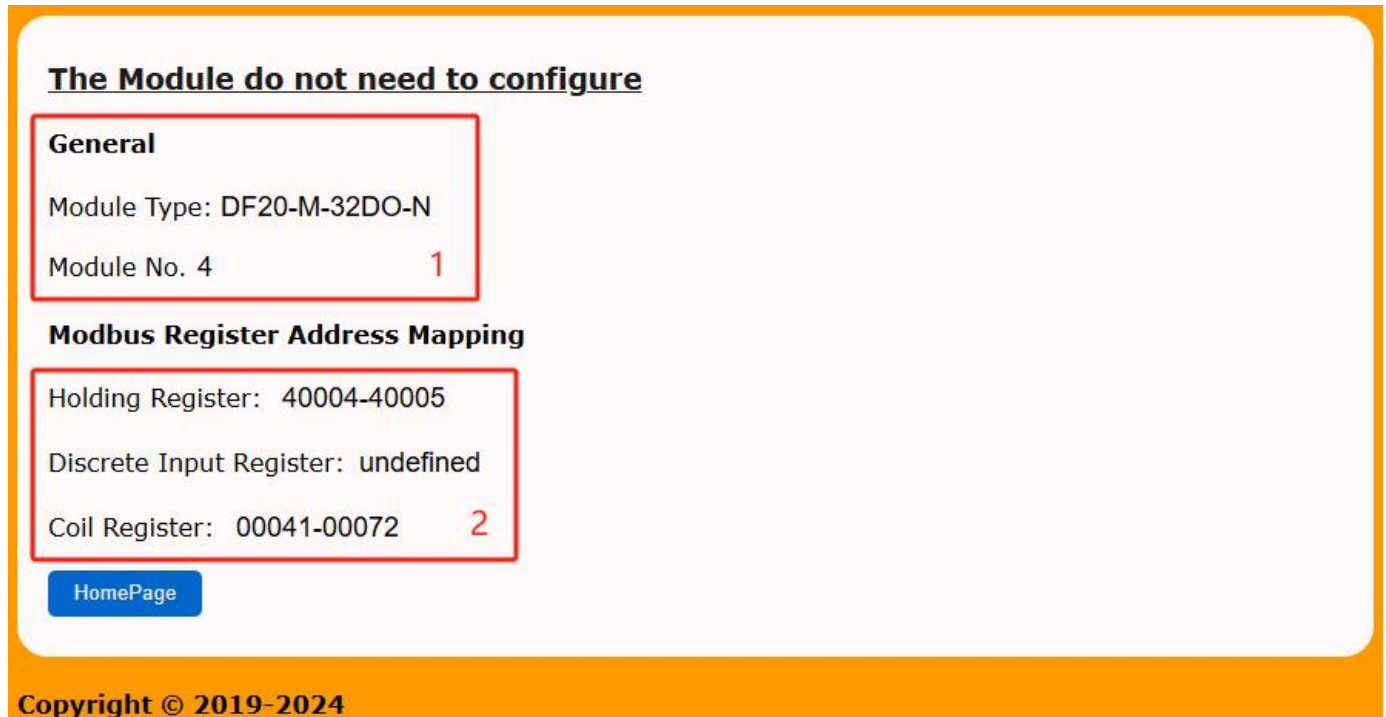
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.14 DF20-M-32DO-N channel configuration

- Clicking on an **DF20-M-32DO-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-32DO-N

Module No. 4 1

Modbus Register Address Mapping

Holding Register: 40004-40005

Discrete Input Register: undefined

Coil Register: 00041-00072 2

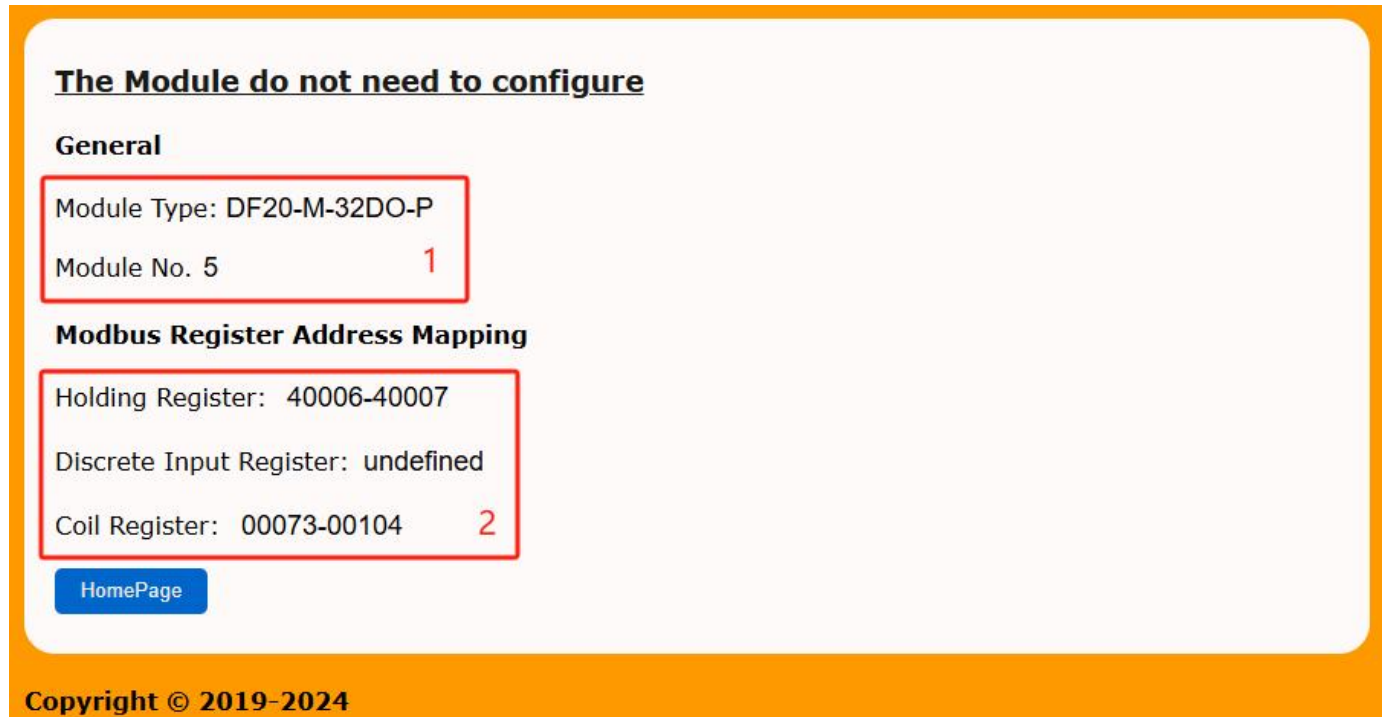
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.15 DF20-M-32DO-P channel configuration

- Clicking on an **DF20-M-32DO-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-32DO-P

Module No. 5 1

Modbus Register Address Mapping

Holding Register: 40006-40007

Discrete Input Register: undefined

Coil Register: 00073-00104 2

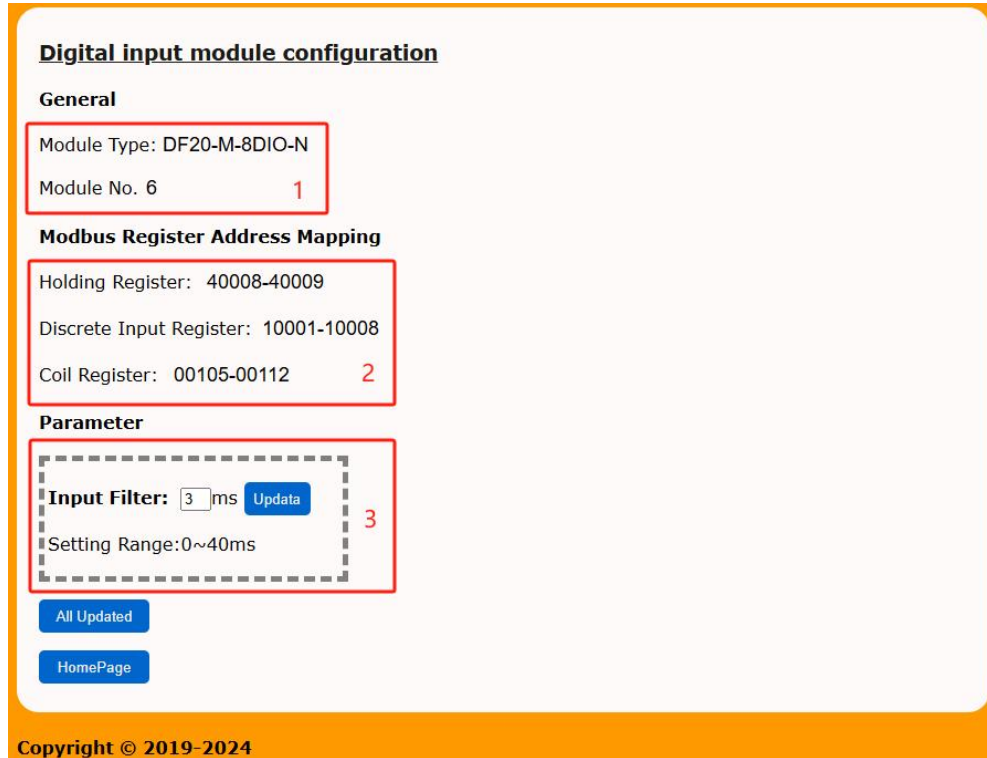
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.16 DF20-M-8DIO-N channel configuration

- Clicking on an **DF20-M-8DIO-N** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-8DIO-N

Module No. 6

Modbus Register Address Mapping

Holding Register: 40008-40009

Discrete Input Register: 10001-10008

Coil Register: 00105-00112

Parameter

Input Filter: 3 ms

Setting Range: 0~40ms

All Updated

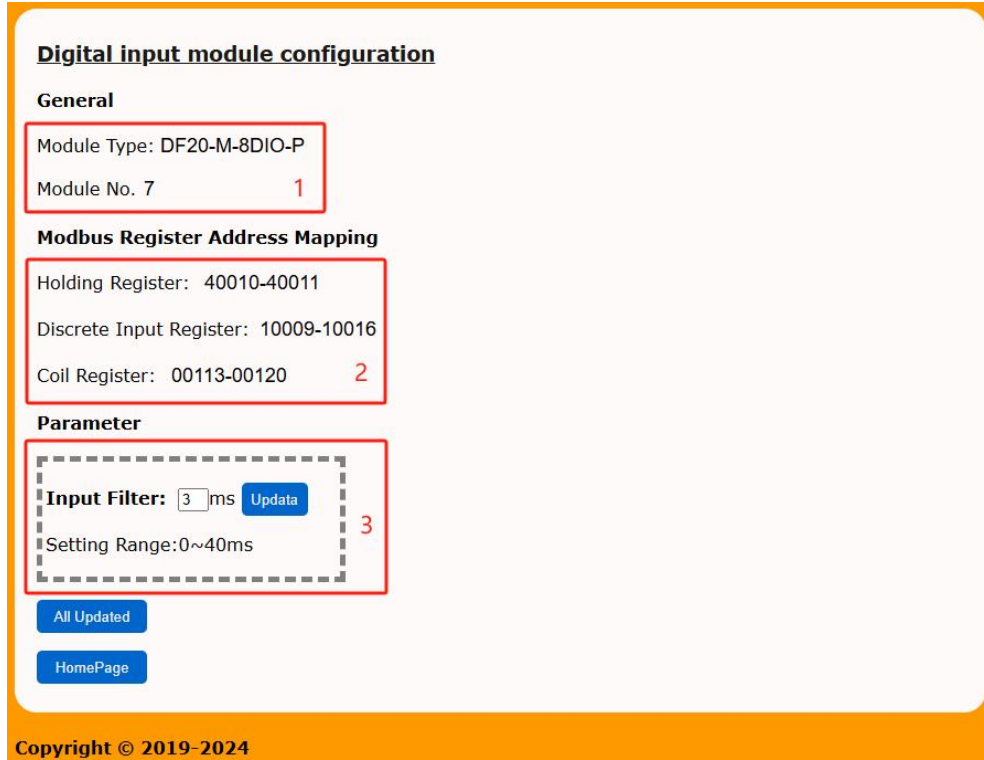
Home Page

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **Home Page** to return to the home page.

4.17 DF20-M-8DIO-P channel configuration

- Clicking on an **DF20-M-8DIO-P** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Digital input module configuration

General

Module Type: DF20-M-8DIO-P

Module No. 7

Modbus Register Address Mapping

Holding Register: 40010-40011

Discrete Input Register: 10009-10016

Coil Register: 00113-00120

Parameter

Input Filter: 3 ms

Setting Range: 0~40ms

All Updated

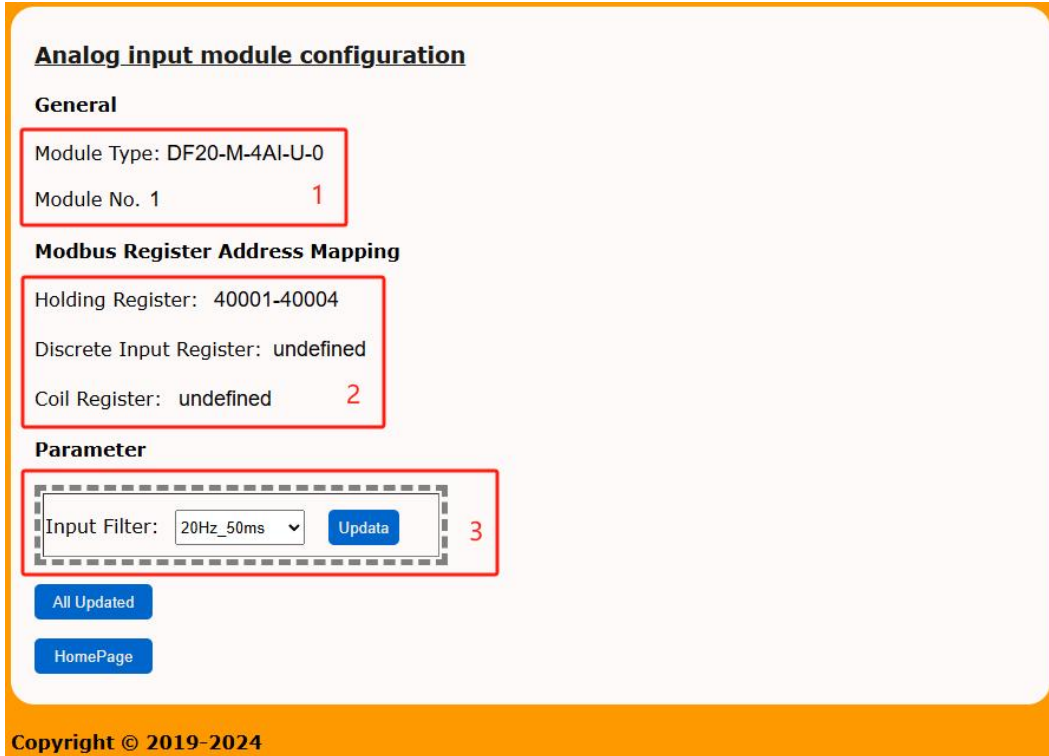
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.18 DF20-M-4AI-U-0 channel configuration

- Clicking on an **DF20-M-4AI-U-0** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-U-0

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001-40004

Discrete Input Register: undefined

Coil Register: undefined

Parameter

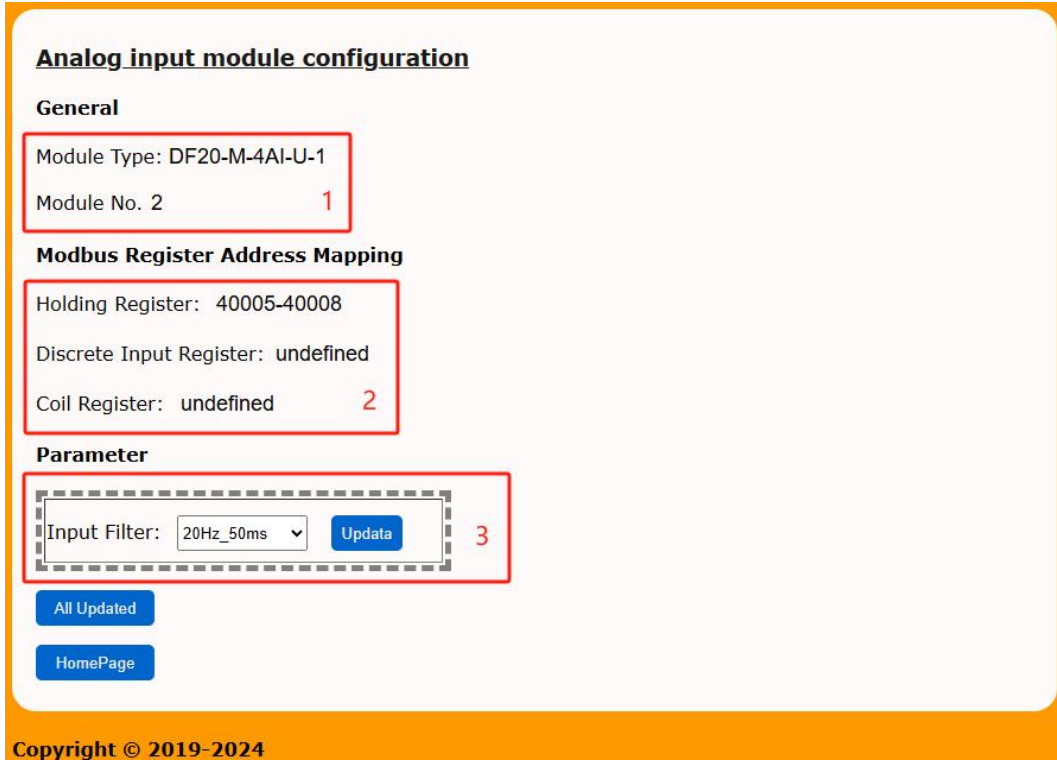
Input Filter: 20Hz_50ms

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.19 DF20-M-4AI-U-1 channel configuration

- Clicking on an **DF20-M-4AI-U-1** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-U-1

Module No. 2 **1**

Modbus Register Address Mapping

Holding Register: 40005-40008

Discrete Input Register: undefined

Coil Register: undefined **2**

Parameter

Input Filter: 20Hz_50ms **Update** **3**

All Updated

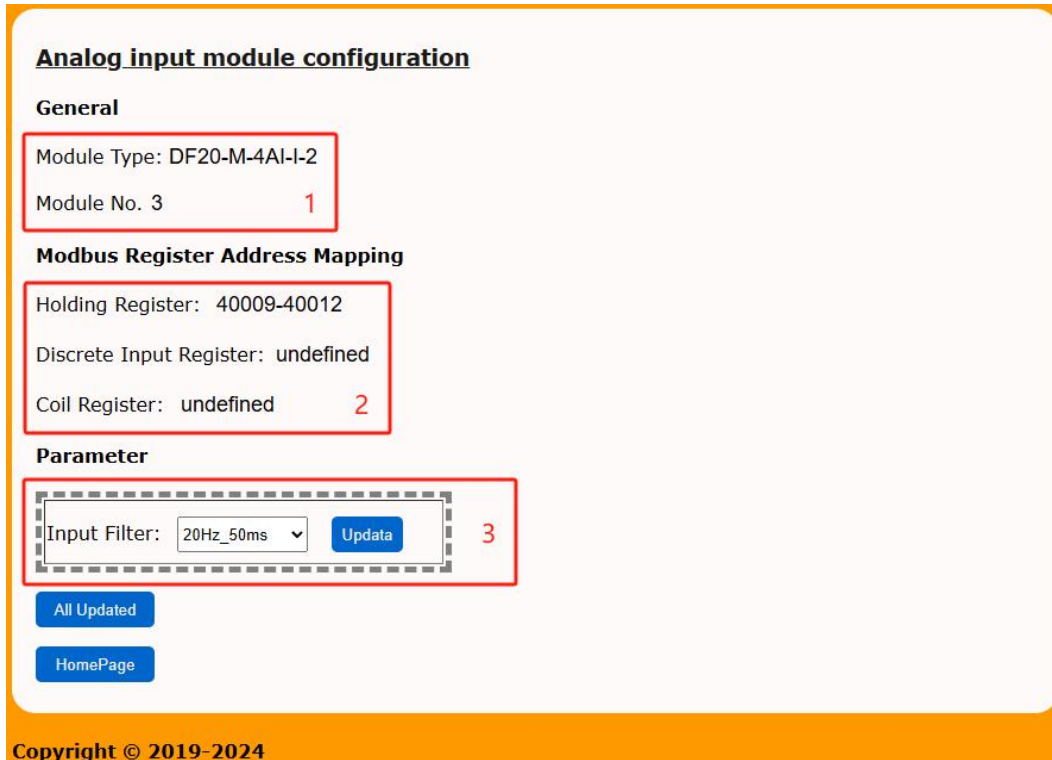
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.20 DF20-M-4AI-I-2 channel configuration

- Clicking on an **DF20-M-4AI-I-2** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-I-2

Module No. 3 1

Modbus Register Address Mapping

Holding Register: 40009-40012

Discrete Input Register: undefined

Coil Register: undefined 2

Parameter

Input Filter: 20Hz_50ms Update 3

[All Updated](#)

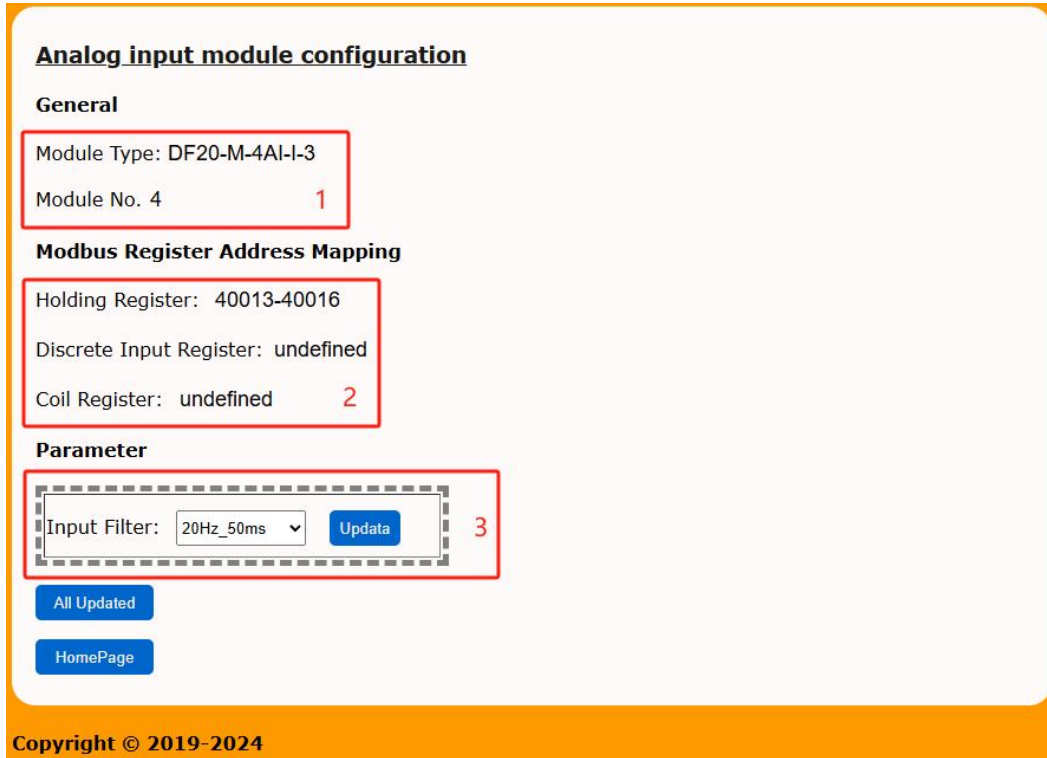
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.21 DF20-M-4AI-I-3 channel configuration

- Clicking on an **DF20-M-4AI-I-3** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-I-3

Module No. 4

Modbus Register Address Mapping

Holding Register: 40013-40016

Discrete Input Register: undefined

Coil Register: undefined

Parameter

Input Filter: 20Hz_50ms

Update

All Updated

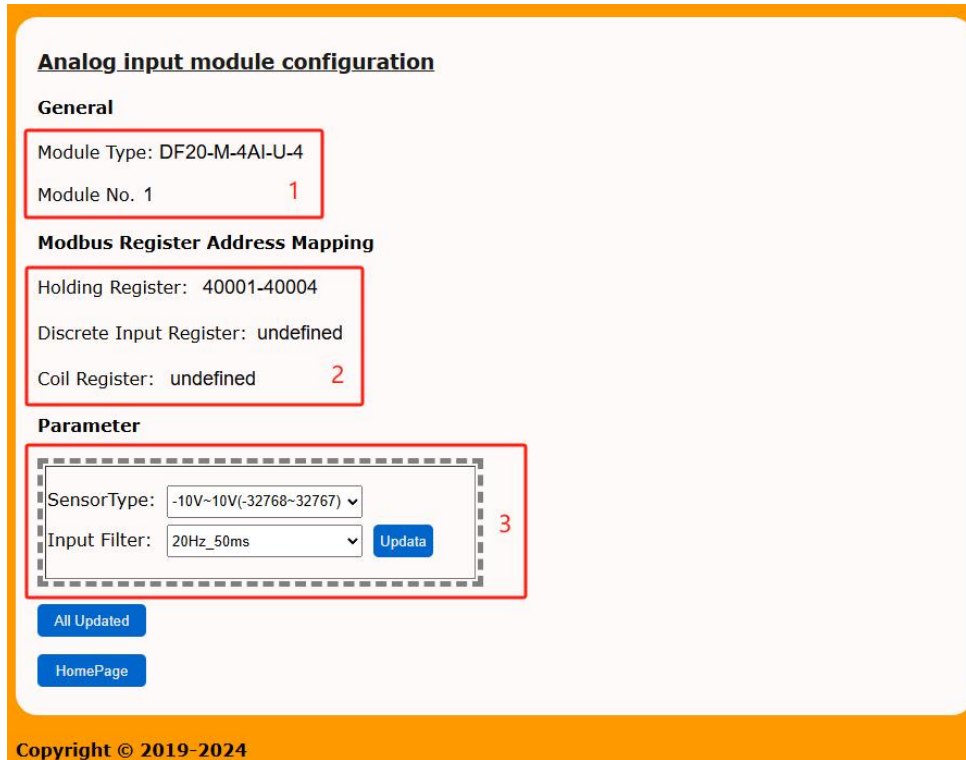
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.22 DF20-M-4AI-U-4 channel configuration

- Clicking on an **DF20-M-4AI-U-4** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-U-4

Module No. 1

Modbus Register Address Mapping

Holding Register: 40001-40004

Discrete Input Register: undefined

Coil Register: undefined

Parameter

SensorType: -10V~10V(-32768~32767)

Input Filter: 20Hz_50ms

Update

All Updated

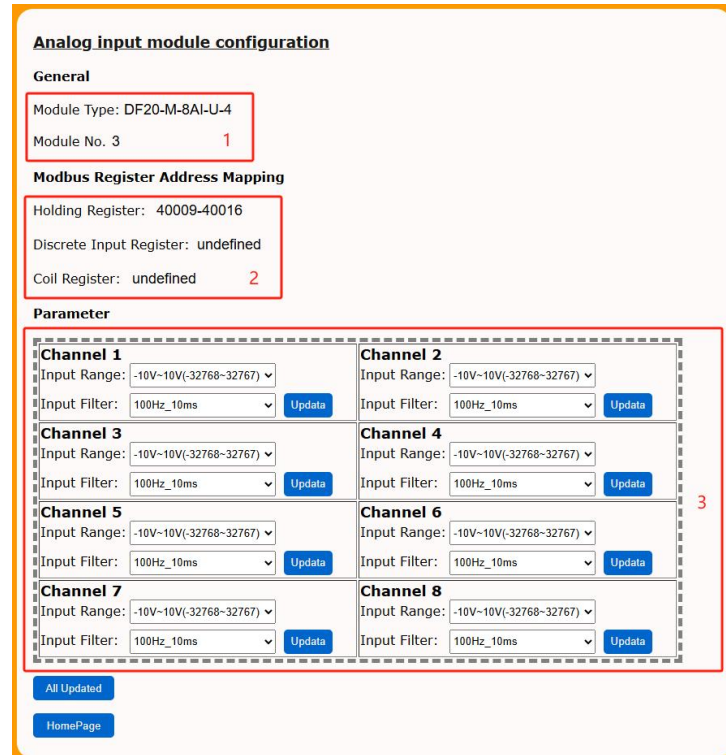
HomePage

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.23 DF20-M-8AI-U-4 channel configuration

- Clicking on an **DF20-M-8AI-U-4** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-8AI-U-4

Module No. 3

Modbus Register Address Mapping

Holding Register: 40009-40016

Discrete Input Register: undefined

Coil Register: undefined

Parameter

Channel 1 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms	Channel 2 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms
Channel 3 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms	Channel 4 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms
Channel 5 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms	Channel 6 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms
Channel 7 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms	Channel 8 Input Range: -10V~10V(-32768~32767) Input Filter: 100Hz_10ms

All Updated

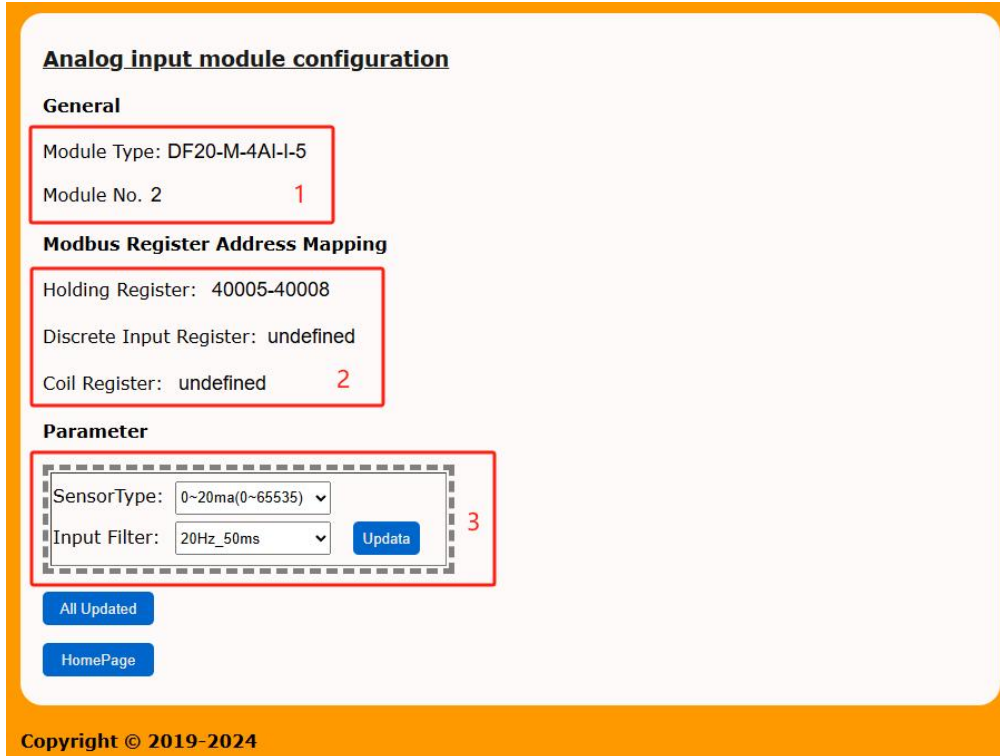
Update

HomePage

- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.24 DF20-M-4AI-U-5 channel configuration

- Clicking on one of the **DF20-M-4AI-I-5** modules will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-4AI-I-5

Module No. 2 1

Modbus Register Address Mapping

Holding Register: 40005-40008

Discrete Input Register: undefined

Coil Register: undefined 2

Parameter

SensorType: 0~20ma(0~65535) ▼

Input Filter: 20Hz_50ms ▼ 3 [Update](#)

[All Updated](#)

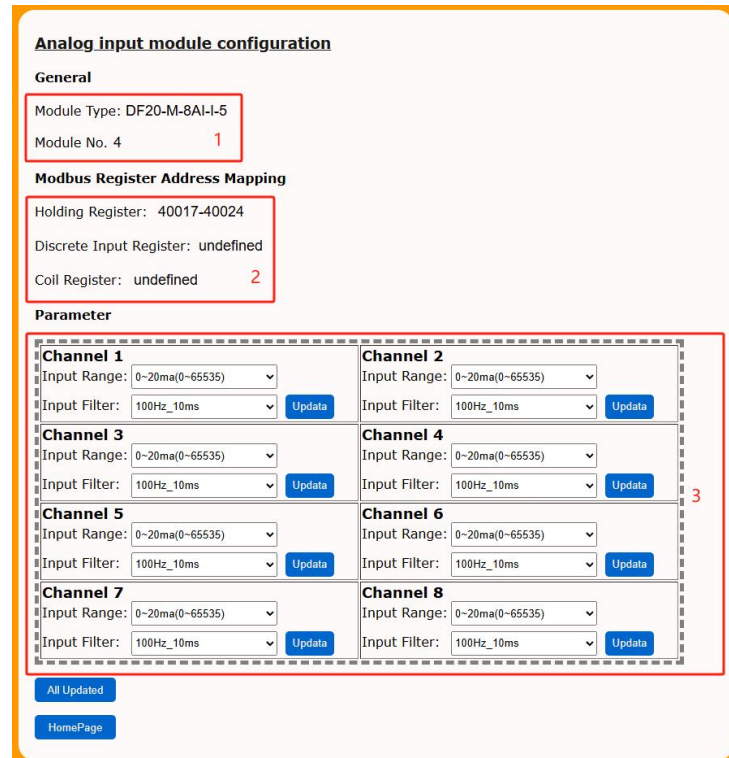
[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.25 DF20-M-8AI-I-5 channel configuration

- Clicking on an **DF20-M-8AI-I-5** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-8AI-I-5

Module No. 4

Modbus Register Address Mapping

Holding Register: 40017-40024

Discrete Input Register: undefined

Coil Register: undefined

Parameter

Channel	Input Range	Input Filter	Update
Channel 1	0~20ma(0~65535)	100Hz_10ms	Update
Channel 2	0~20ma(0~65535)	100Hz_10ms	Update
Channel 3	0~20ma(0~65535)	100Hz_10ms	Update
Channel 4	0~20ma(0~65535)	100Hz_10ms	Update
Channel 5	0~20ma(0~65535)	100Hz_10ms	Update
Channel 6	0~20ma(0~65535)	100Hz_10ms	Update
Channel 7	0~20ma(0~65535)	100Hz_10ms	Update
Channel 8	0~20ma(0~65535)	100Hz_10ms	Update

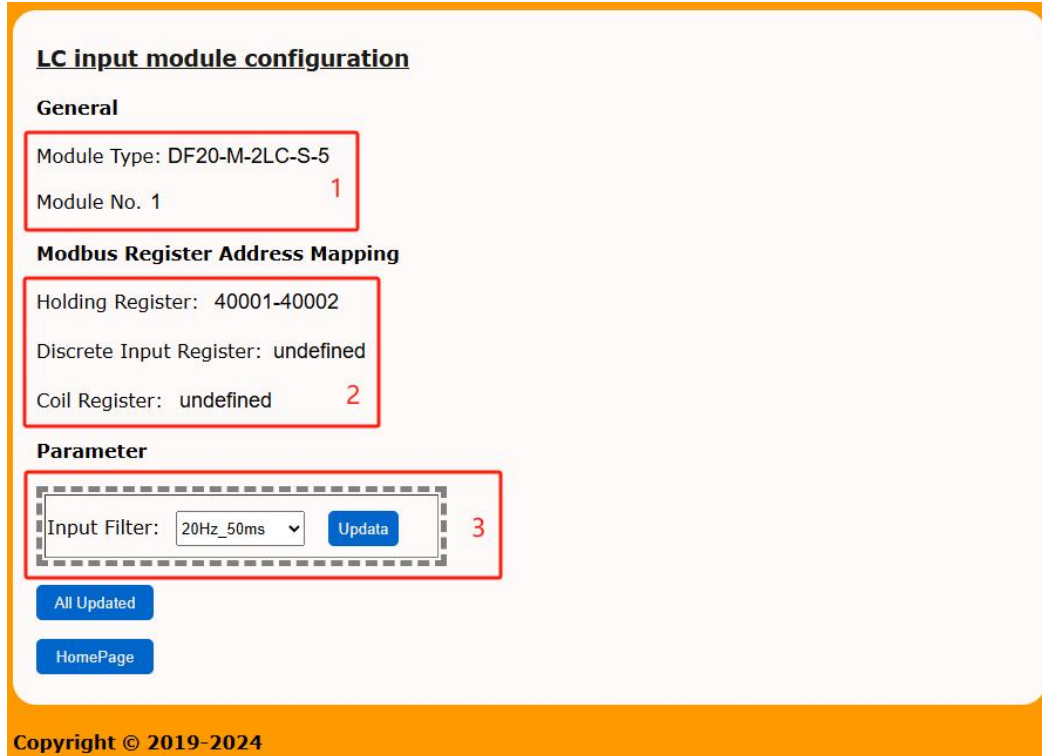
All Updated

HomePage

- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.26 DF20-M-2LC-S-5 channel configuration

- Clicking on an **DF20-M-2LC-S-5** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



LC input module configuration

General

Module Type: DF20-M-2LC-S-5
Module No. 1 1

Modbus Register Address Mapping

Holding Register: 40001-40002
Discrete Input Register: undefined
Coil Register: undefined 2

Parameter

Input Filter: 20Hz_50ms Update 3

[All Updated](#)

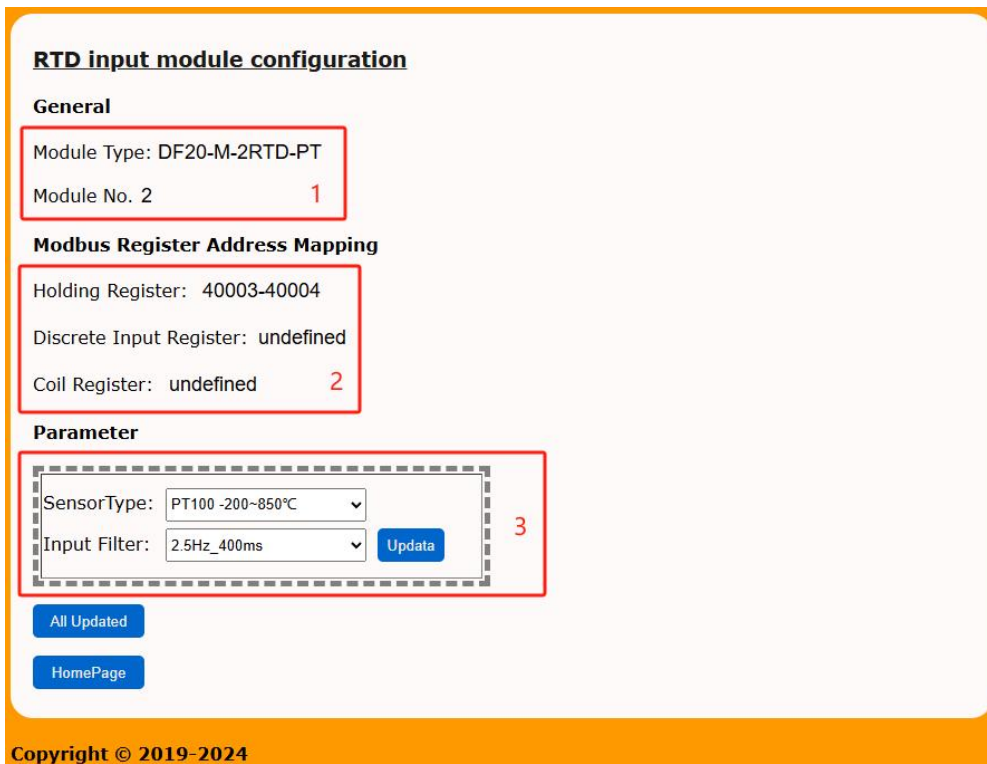
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The filtering parameters of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.27 DF20-M-2RTD-PT channel configuration

- Clicking on an **DF20-M-2RTD-PT** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



RTD input module configuration

General

Module Type: DF20-M-2RTD-PT

Module No. 2

Modbus Register Address Mapping

Holding Register: 40003-40004

Discrete Input Register: undefined

Coil Register: undefined

Parameter

SensorType: PT100 -200~850°C

Input Filter: 2.5Hz_400ms

Update

All Updated

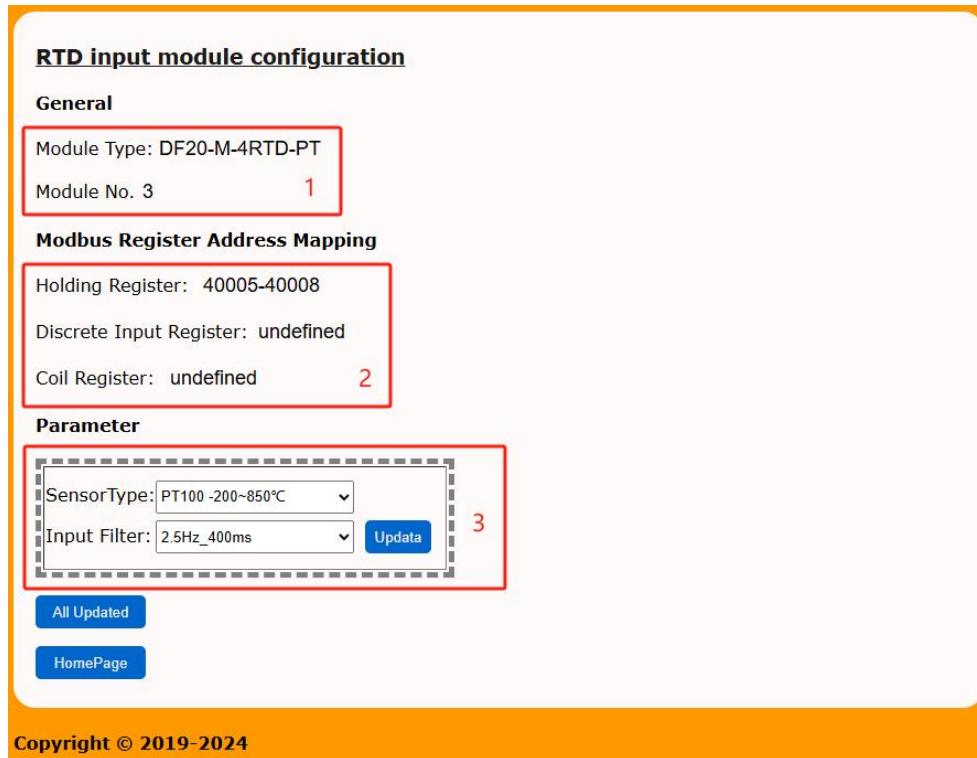
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.28 DF20-M-4RTD-PT channel configuration

- Clicking on an **DF20-M-4RTD-PT** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



RTD input module configuration

General

Module Type: DF20-M-4RTD-PT

Module No. 3

Modbus Register Address Mapping

Holding Register: 40005-40008

Discrete Input Register: undefined

Coil Register: undefined

Parameter

SensorType: PT100 -200~850°C

Input Filter: 2.5Hz_400ms

Update

All Updated

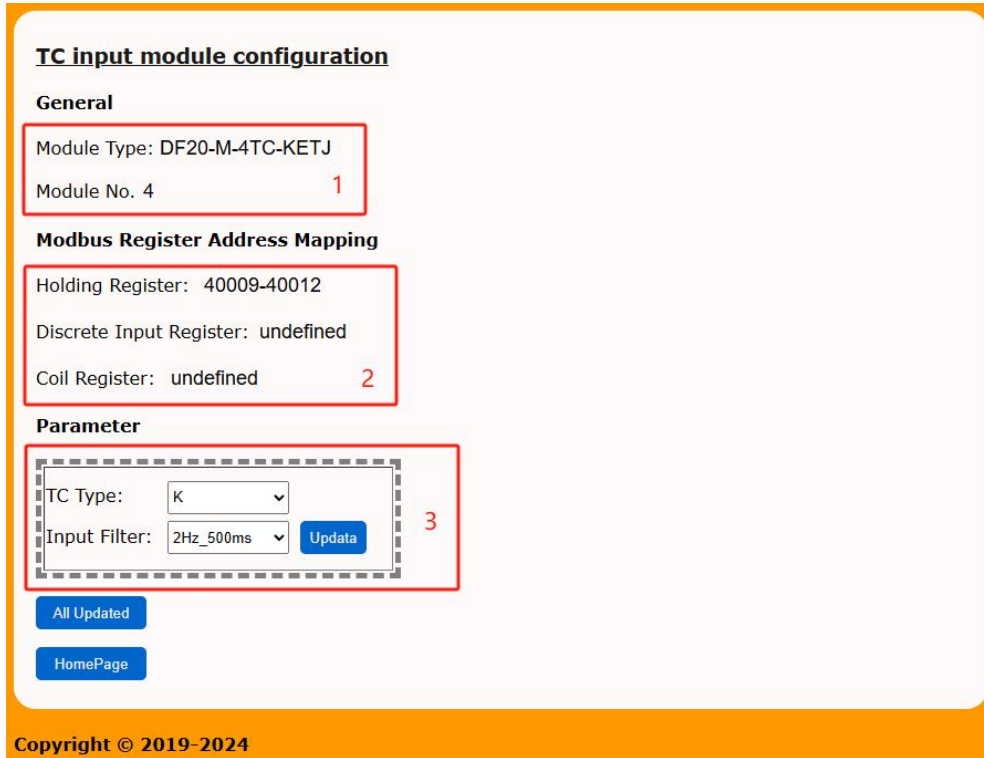
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.29 DF20-M-4TC-KETJ channel configuration

- Clicking on an **DF20-M-4TC-KETJ** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



TC input module configuration

General

Module Type: DF20-M-4TC-KETJ

Module No. 4

Modbus Register Address Mapping

Holding Register: 40009-40012

Discrete Input Register: undefined

Coil Register: undefined

Parameter

TC Type: K

Input Filter: 2Hz_500ms

Update

All Updated

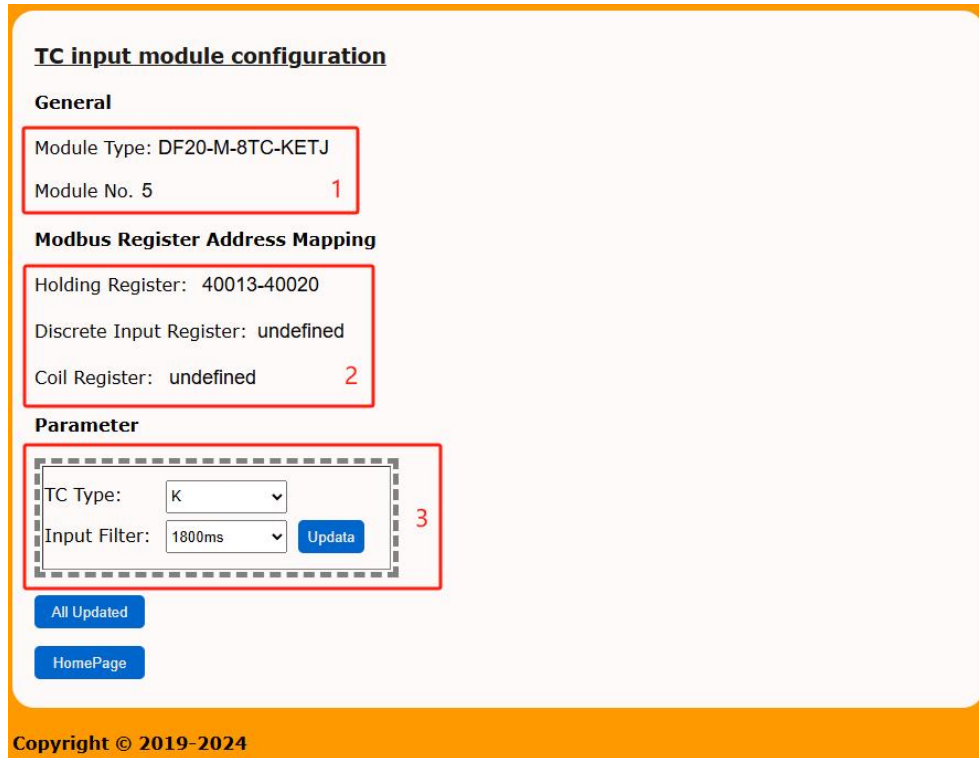
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.30 DF20-M-8TC-KETJ channel configuration

- Clicking on an **DF20-M-8TC-KETJ** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



TC input module configuration

General

Module Type: DF20-M-8TC-KETJ

Module No. 5

Modbus Register Address Mapping

Holding Register: 40013-40020

Discrete Input Register: undefined

Coil Register: undefined

Parameter

TC Type: K

Input Filter: 1800ms

Update

All Updated

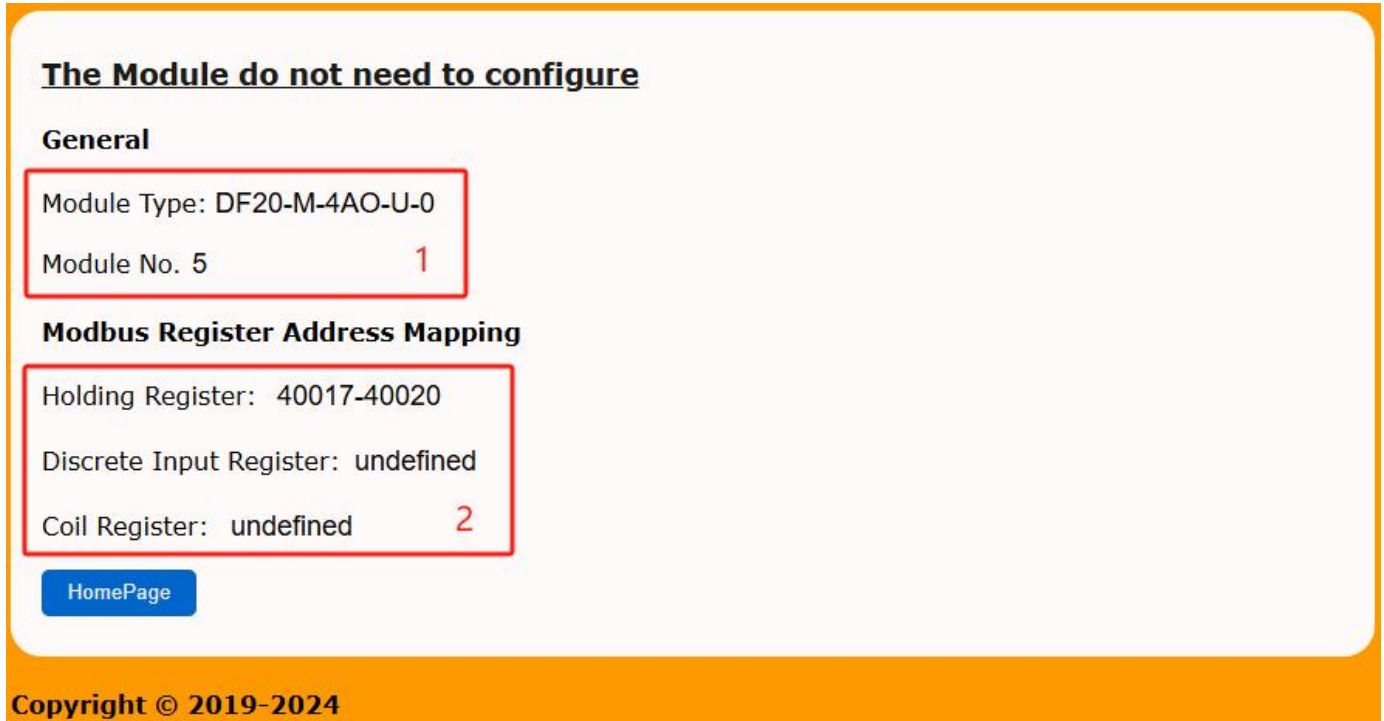
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The module's acquisition signal type and filtering parameters can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.31 DF20-M-4AO-U-0 channel configuration

- By clicking on one of the **DF20-M-4AO-U-0**, you can access the operating parameters of that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-4AO-U-0

Module No. 5 1

Modbus Register Address Mapping

Holding Register: 40017-40020

Discrete Input Register: undefined

Coil Register: undefined 2

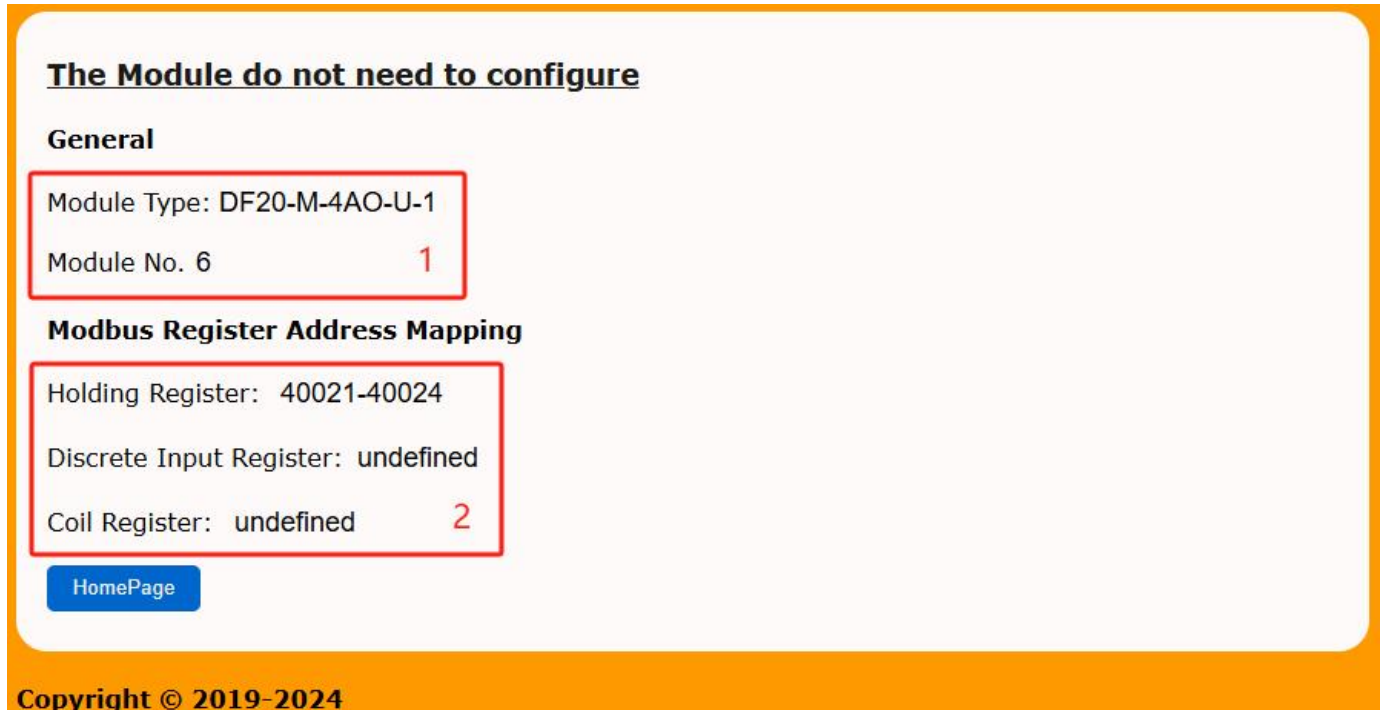
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.32 DF20-M-4AO-U-1 channel configuration

- Clicking on an **DF20-M-4AO-U-1** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-4AO-U-1

Module No. 6 1

Modbus Register Address Mapping

Holding Register: 40021-40024

Discrete Input Register: undefined

Coil Register: undefined 2

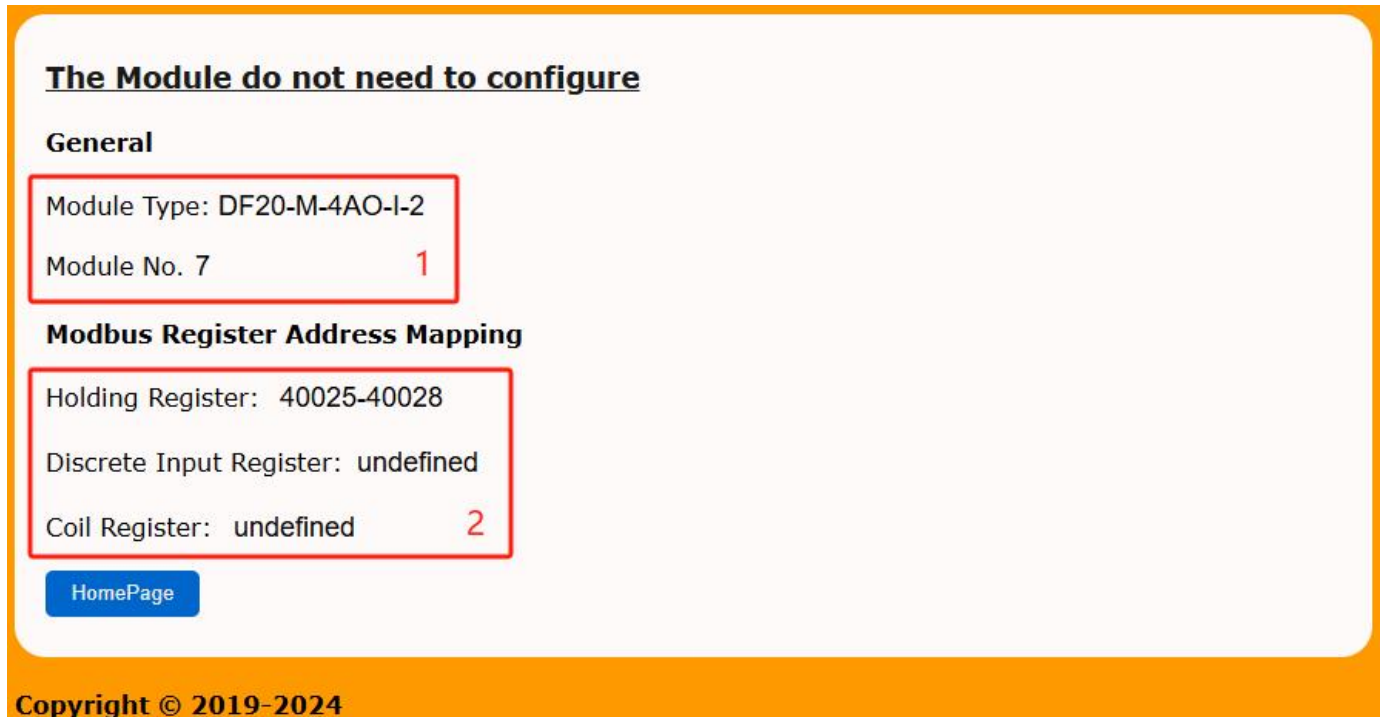
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.33 DF20-M-4AO-I-2 channel configuration

- Clicking on an **DF20-M-4AO-I-2** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-4AO-I-2

Module No. 7 1

Modbus Register Address Mapping

Holding Register: 40025-40028

Discrete Input Register: undefined

Coil Register: undefined 2

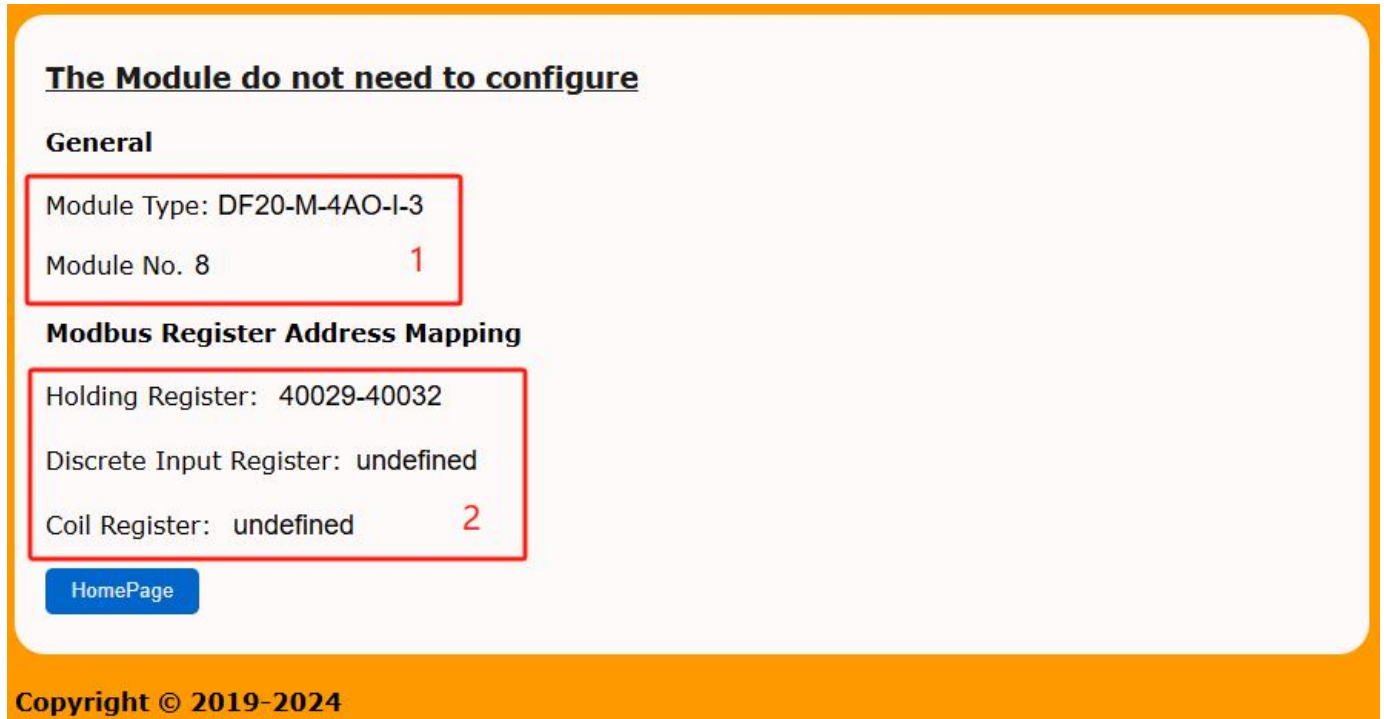
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.34 DF20-M-4AO-I-3 channel configuration

- Clicking on an **DF20-M-4AO-I-3** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-4AO-I-3

Module No. 8 1

Modbus Register Address Mapping

Holding Register: 40029-40032

Discrete Input Register: undefined

Coil Register: undefined 2

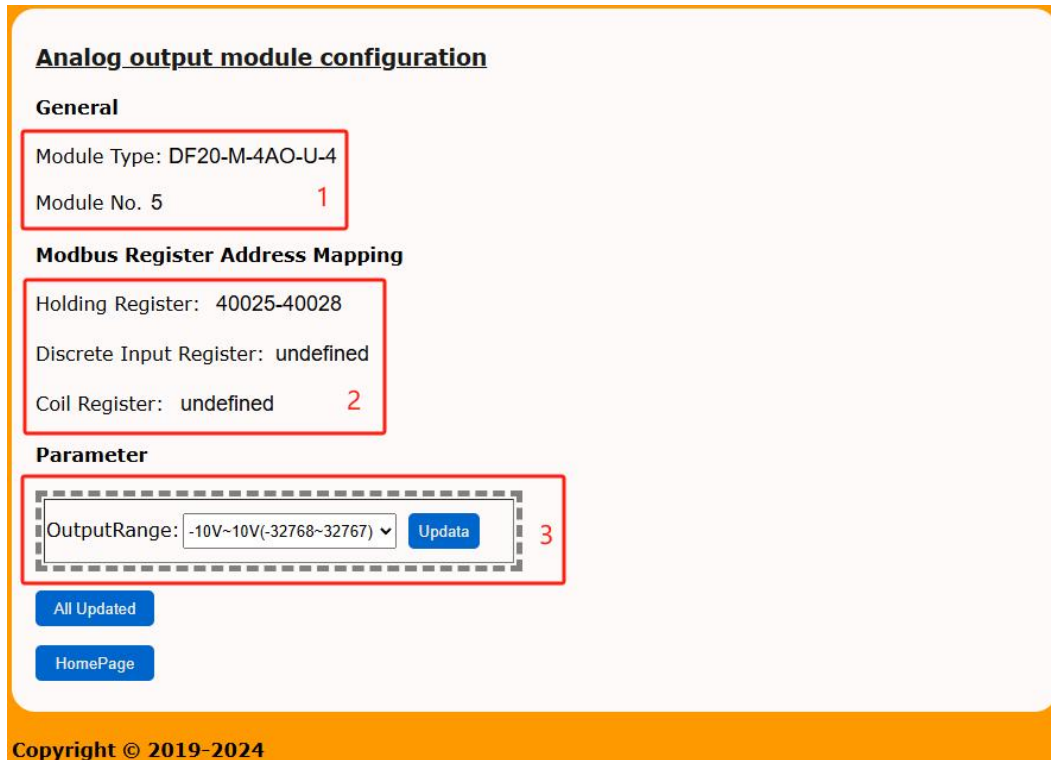
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.35 DF20-M-4AO-U-4 channel configuration

- Clicking on an **DF20-M-4AO-U-4** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog output module configuration

General

Module Type: DF20-M-4AO-U-4

Module No. 5 1

Modbus Register Address Mapping

Holding Register: 40025-40028

Discrete Input Register: undefined

Coil Register: undefined 2

Parameter

OutputRange: -10V~10V(-32768~32767) 3 [Update](#)

[All Updated](#)

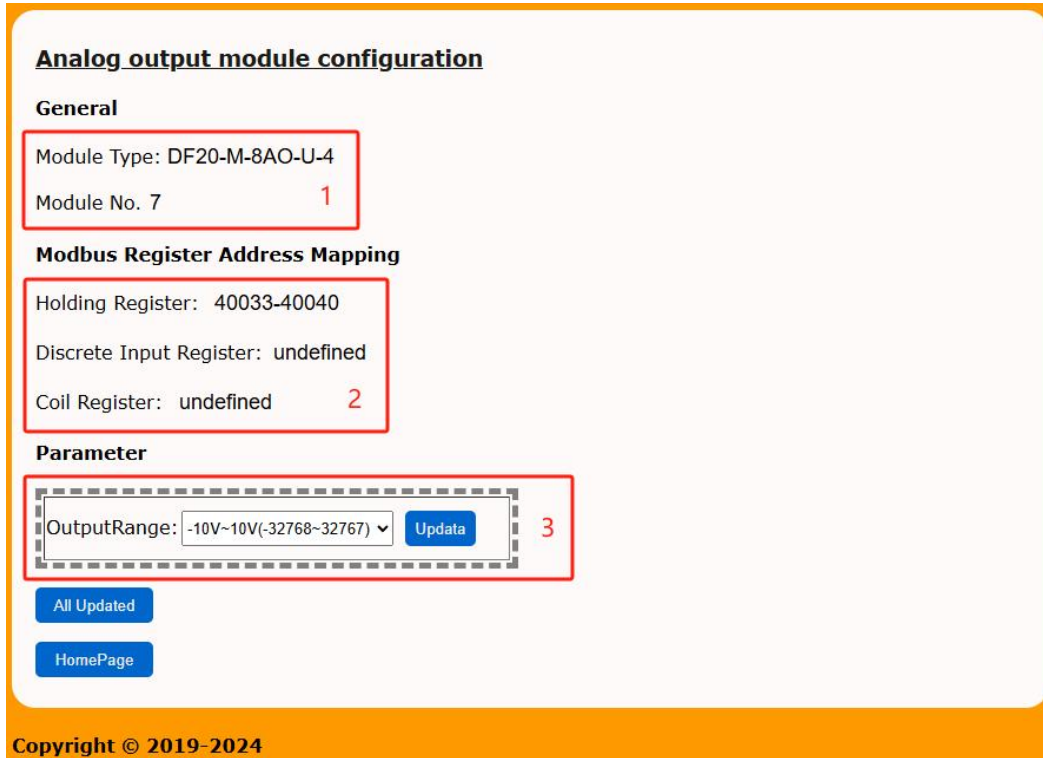
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The output signal type of the module can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.36 DF20-M-8AO-U-4 channel configuration

- Clicking on an **DF20-M-8AO-U-4** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog output module configuration

General

Module Type: DF20-M-8AO-U-4

Module No. 7 1

Modbus Register Address Mapping

Holding Register: 40033-40040

Discrete Input Register: undefined

Coil Register: undefined 2

Parameter

OutputRange: -10V~10V(-32768~32767) 3 [Update](#)

[All Updated](#)

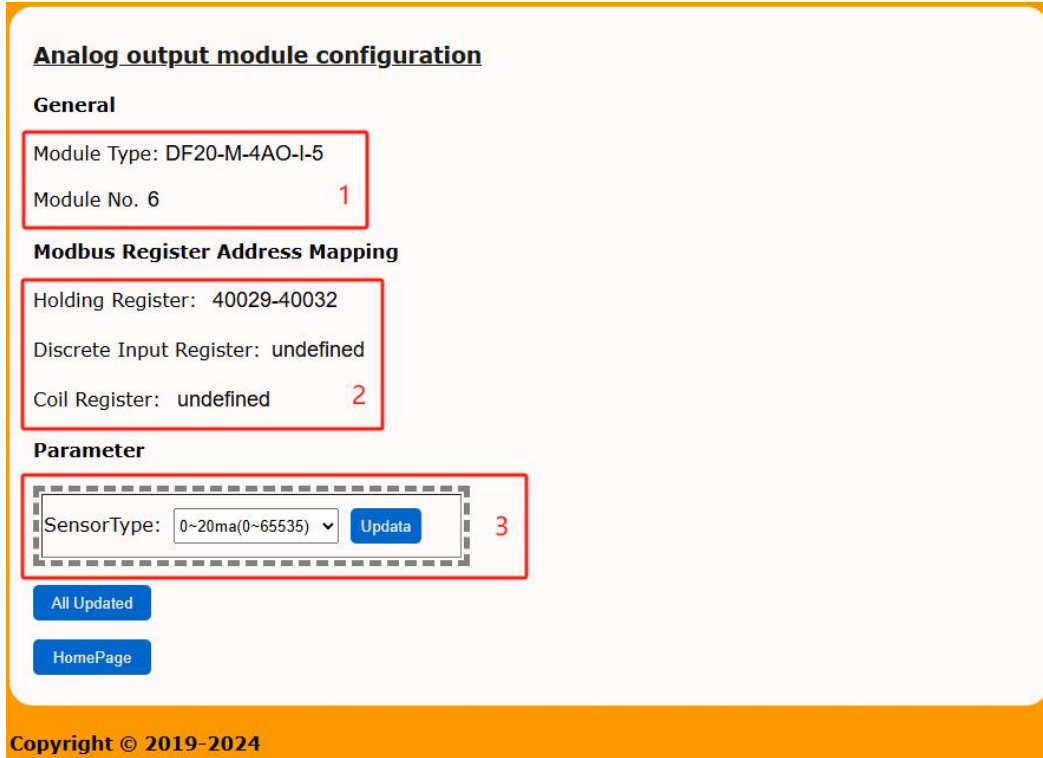
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The output signal type of the module can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.37 DF20-M-4AO-1-5 channel configuration

- Clicking on an **DF20-M-4AO-I-5** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog output module configuration

General

Module Type: DF20-M-4AO-I-5
Module No. 6 1

Modbus Register Address Mapping

Holding Register: 40029-40032
Discrete Input Register: undefined
Coil Register: undefined 2

Parameter

SensorType: 0~20ma(0~65535) Update 3

All Updated

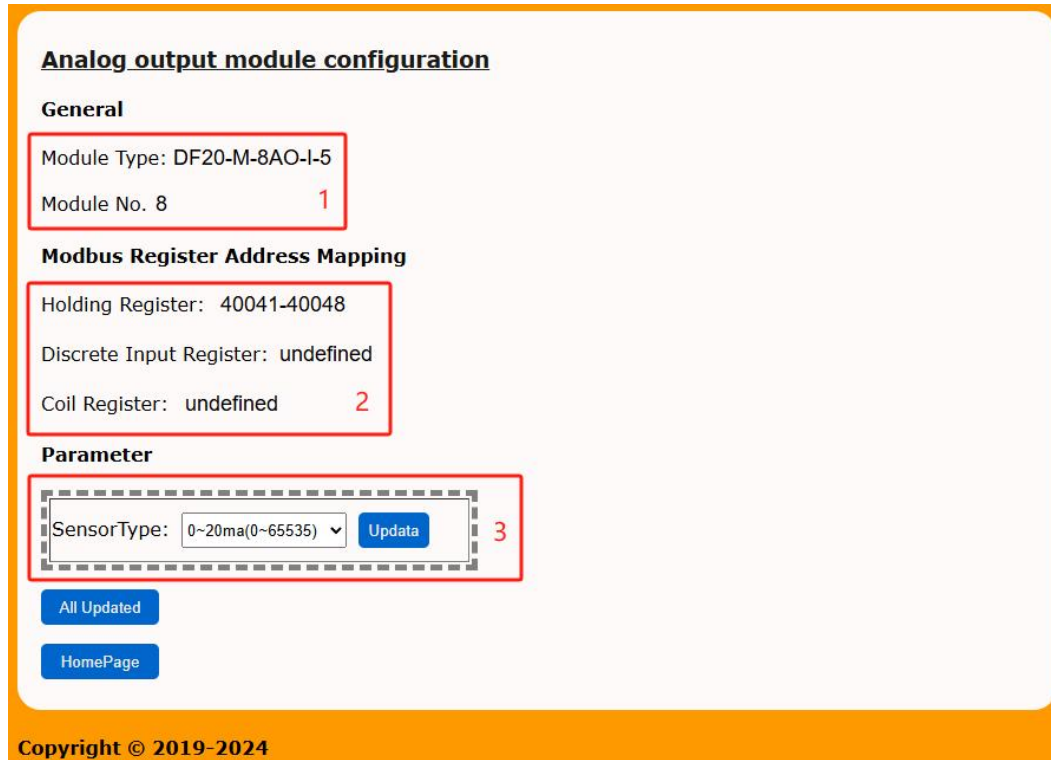
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The output signal type of the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.38 DF20-M-8AO-1-5 channel configuration

- Clicking on an **DF20-M-8AO-1-5** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog output module configuration

General

Module Type: DF20-M-8AO-I-5

Module No. 8 1

Modbus Register Address Mapping

Holding Register: 40041-40048

Discrete Input Register: undefined

Coil Register: undefined 2

Parameter

SensorType: 0~20ma(0~65535) Updata 3

[All Updated](#)

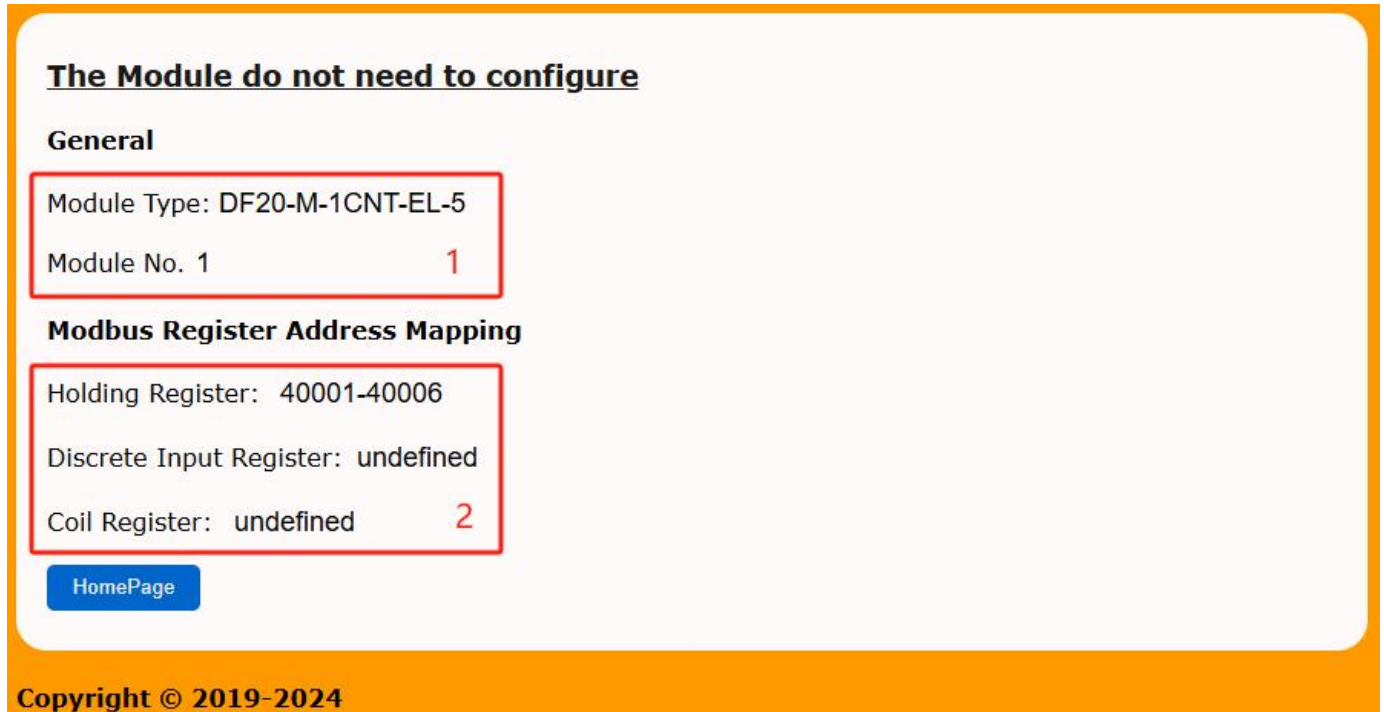
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- The output signal type of the module can be set in zone 3.
- Click on either **Updata** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.39 DF20-M-1CNT-EL-5 channel configuration

- Clicking on an **DF20-M-1CNT-EL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-1CNT-EL-5

Module No. 1 1

Modbus Register Address Mapping

Holding Register: 40001-40006

Discrete Input Register: undefined

Coil Register: undefined 2

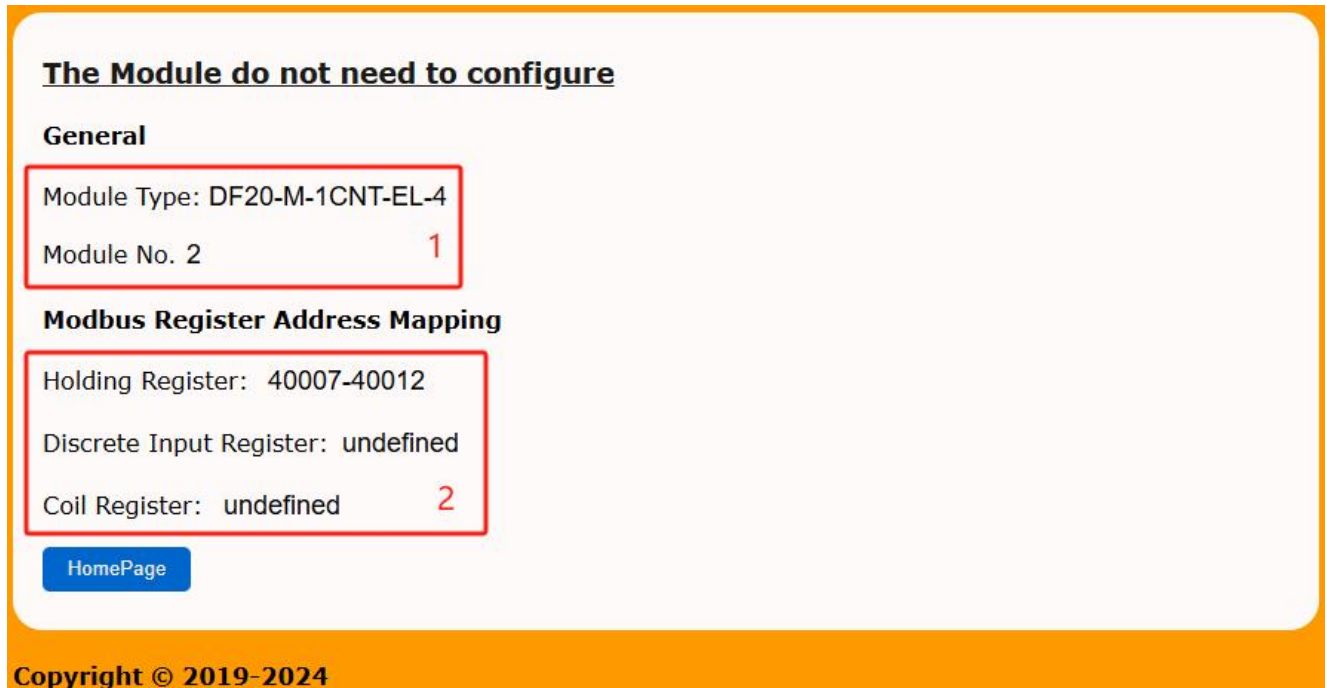
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.40 DF20-M-1CNT-EL-4 channel configuration

- Clicking on an **DF20-M-1CNT-EL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-1CNT-EL-4

Module No. 2 1

Modbus Register Address Mapping

Holding Register: 40007-40012

Discrete Input Register: undefined

Coil Register: undefined 2

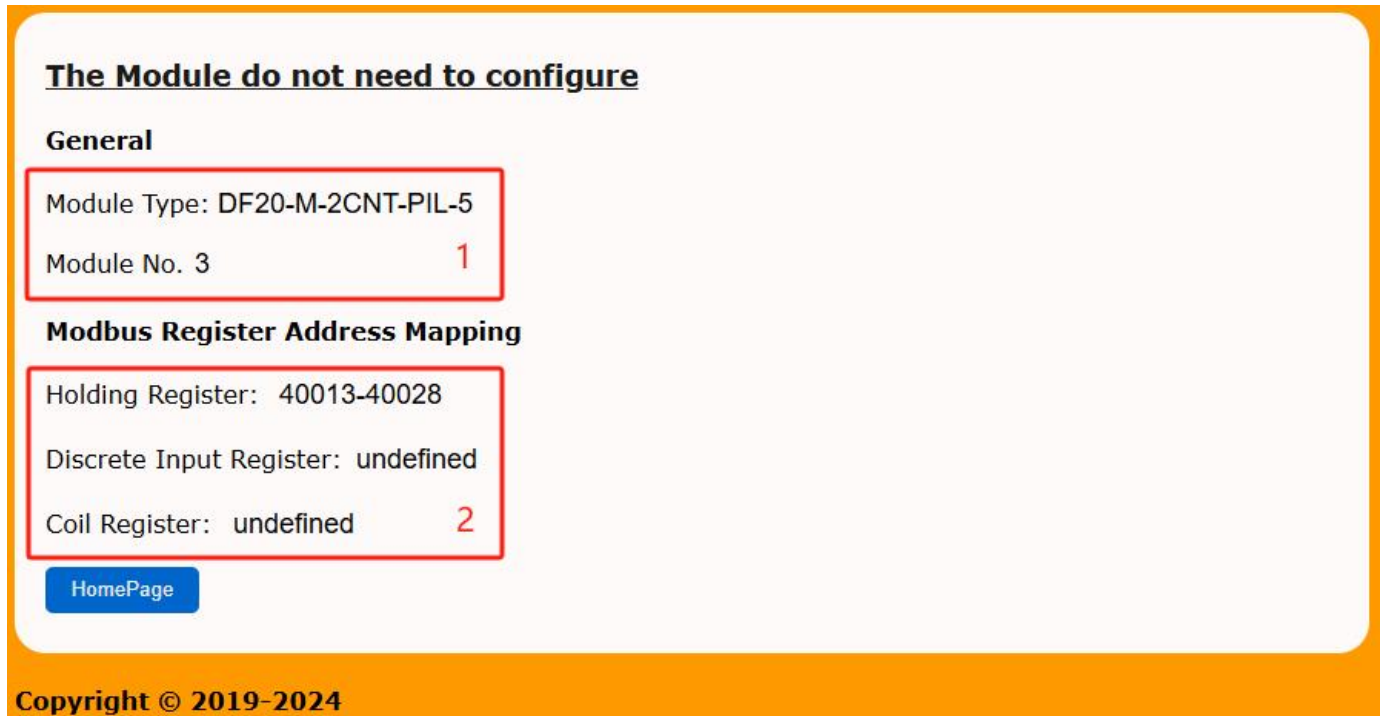
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.41 DF20-M-2CNT-PIL-5 channel configuration

- Clicking on an **DF20-M-2CNT-PIL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-2CNT-PIL-5

Module No. 3 1

Modbus Register Address Mapping

Holding Register: 40013-40028

Discrete Input Register: undefined

Coil Register: undefined 2

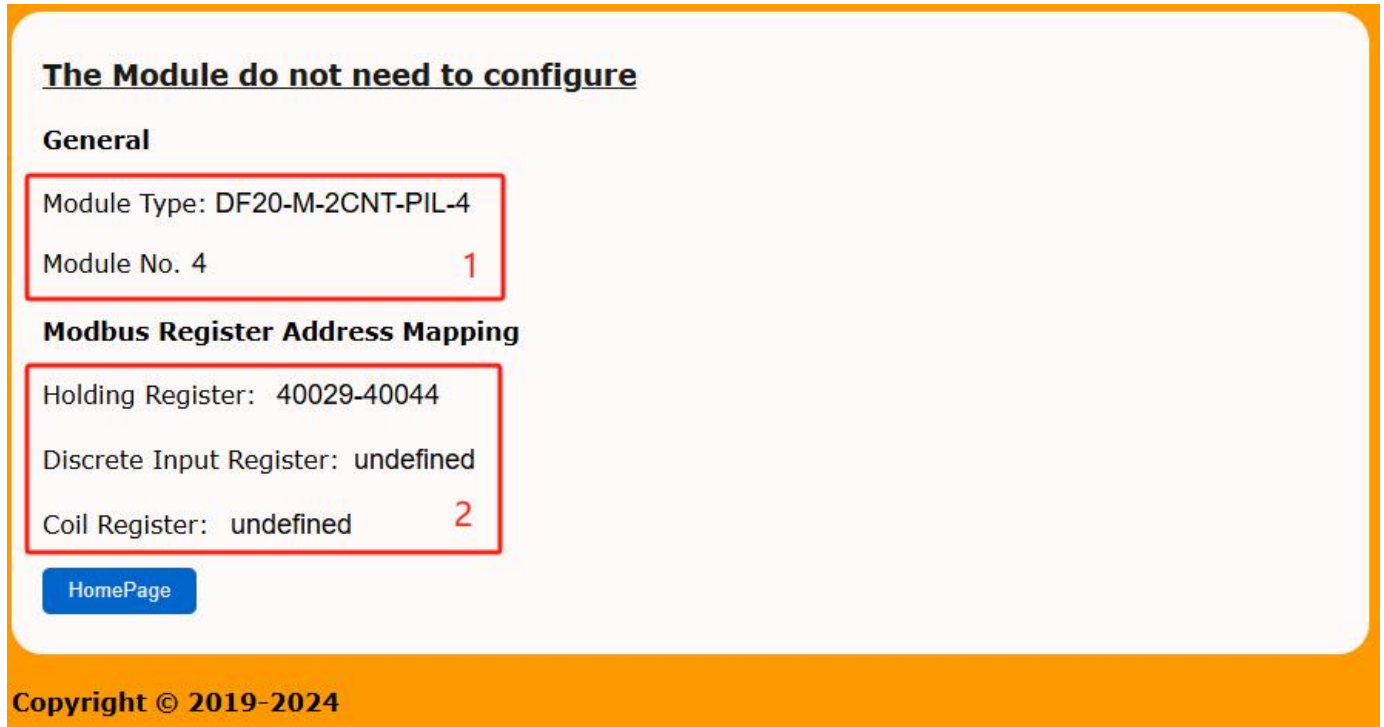
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.42 DF20-M-2CNT-PIL-4 channel configuration

- Clicking on an **DF20-M-2CNT-PIL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



The Module do not need to configure

General

Module Type: DF20-M-2CNT-PIL-4

Module No. 4 1

Modbus Register Address Mapping

Holding Register: 40029-40044

Discrete Input Register: undefined

Coil Register: undefined 2

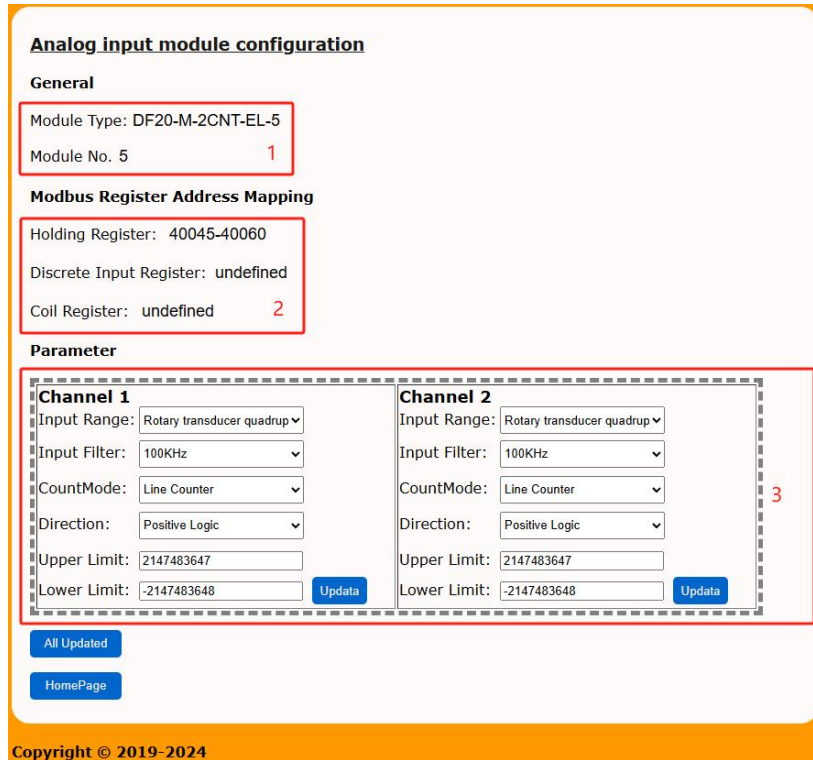
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.43 DF20-M-2CNT-EL-5 channel configuration

- Clicking on an **DF20-M-2CNT-EL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-2CNT-EL-5

Module No. 5

Modbus Register Address Mapping

Holding Register: 40045-40060

Discrete Input Register: undefined

Coil Register: undefined

Parameter

Channel 1	Channel 2
Input Range: Rotary transducer quadrup	Input Range: Rotary transducer quadrup
Input Filter: 100KHz	Input Filter: 100KHz
CountMode: Line Counter	CountMode: Line Counter
Direction: Positive Logic	Direction: Positive Logic
Upper Limit: 2147483647	Upper Limit: 2147483647
Lower Limit: -2147483648	Lower Limit: -2147483648

All Updated

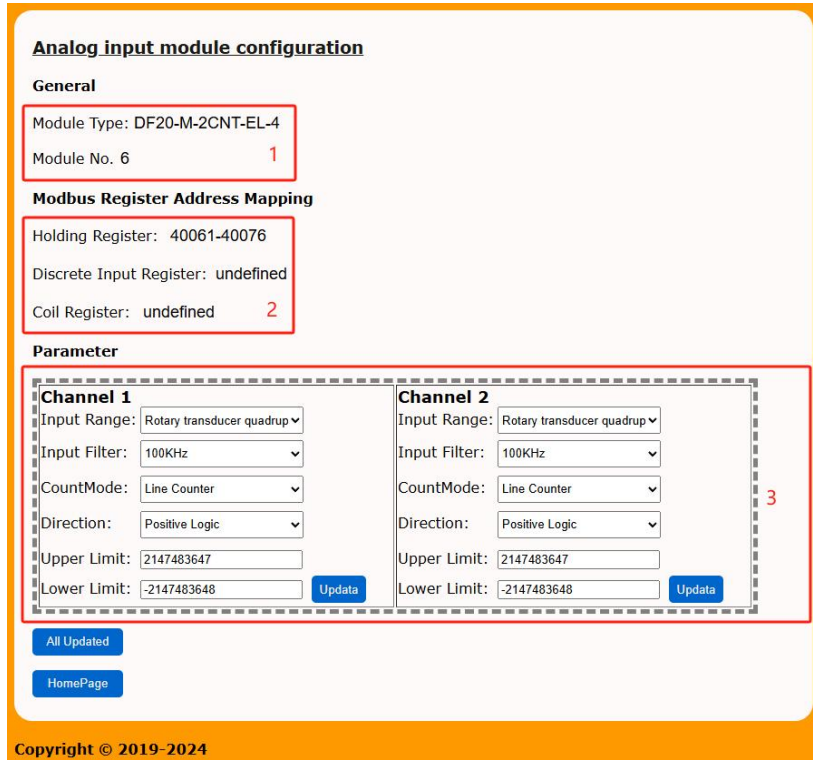
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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Configuration information for the module can be set in zone 3.
- Click on either **Update** or **All Updated** to send an update parameter command, or click on **HomePage** to return to the home page.

4.44 DF20-M-2CNT-EL-4 channel configuration

- Clicking on an **DF20-M-2CNT-EL** will take you to the configuration of the operating parameters for that type of module, as shown in the following figure.



Analog input module configuration

General

Module Type: DF20-M-2CNT-EL-4

Module No. 6

Modbus Register Address Mapping

Holding Register: 40061-40076

Discrete Input Register: undefined

Coil Register: undefined

Parameter

Channel 1	Channel 2
Input Range: Rotary transducer quadrup	Input Range: Rotary transducer quadrup
Input Filter: 100KHz	Input Filter: 100KHz
CountMode: Line Counter	CountMode: Line Counter
Direction: Positive Logic	Direction: Positive Logic
Upper Limit: 2147483647	Upper Limit: 2147483647
Lower Limit: -2147483648	Lower Limit: -2147483648
Update	Update

[All Updated](#)

[HomePage](#)

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- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.
- Configuration information for the module can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

4.45 DF20-M-2PWM channel configuration

- By clicking on one of the **DF20-M-2PWM**, you can access the operating parameters of that type of module, as shown below.

Analog output module configuration

General

Module Type: DF20-M-2PWM
Module No. 9

Modbus Register Address Mapping

Holding Register: 40049-40062
Discrete Input Register: undefined
Coil Register: undefined

Parameter

Channel 1

Pules Mode: Pulse/Dir
Motion Mode: Jog
Ramp Mode: Ramp Enable
Direction: Positive Logic
Signal Type: OpenDrain
Duty Cycle: Duty cycle disable
Freq Range: 100Hz~6kHz
Startup Freq: 1000
Target Freq: 10000
Up Time: 100
Dn Time: 100

Update

Channel 2

Pules Mode: Pulse/Dir
Motion Mode: Jog
Ramp Mode: Ramp Enable
Direction: Positive Logic
Signal Type: OpenDrain
Duty Cycle: Duty cycle disable
Freq Range: 100Hz~6kHz
Startup Freq: 1000
Target Freq: 10000
Up Time: 100
Dn Time: 100

Update

All Updated

HomePage

- The module name and the serial number of the module in the application are displayed in Area 1.
- Area 2 shows the Modbus register address mapping of the module in the current configuration.

- Configuration information for the module can be set in zone 3.
- Click on either [Update](#) or [All Updated](#) to send an update parameter command, or click on [HomePage](#) to return to the home page.

Name	Size	range of values	Default	Meaning
Pulse Mode	2.0	See DTA41A0: table	0	Channel 1 Signal Type.
Motion Mode	2.0	See DTB41A0: table	0	Channel 1 pulse control method.
Ramp Mode	2.0	See DTC41A0: Table	0	Channel 1 pulse ramp enable.
Direction Mode	2.0	See DTD41A0: table	0	Channel 1 Direction Logic.
Signal Type	2.0	See DTE41A0: table	0	Channel 1 pulse output method.
Duty Cycle	2.0	See DTF41A0: Table	0	Channel 1 PWM signal duty cycle enable.
PWM Freq Range	2.0	See DTA41B0: table	3	Channel 1 PWM frequency range.

Startup Freq	4.0	800~4000000	1000	Channel 1 pulse output starting frequency, unit HZ.
Target Freq	4.0	800~4000000	10000	Channel 1 pulse output target frequency, unit HZ.
Ramp Up Time	2.0	10~4096	100	Channel 1 pulse output ramp-up time, unit ms.
Ramp Dn Time	2.0	10~4096	100	Channel 1 pulse output downslope time, unit ms.

Table DTA41A0:

subindexed object data	Name	Meaning
0	Pulse/Dir	pulse plus direction
1	CW/CCW(Not Supported)	Not supported at this time
2	A/B(Not Supported)	Not supported at this time
3	PWM	PWM

Table DTB41A0:

subindexed object data	Name	Meaning
0	Jog	Point-and-click control
1	RelativePosition	relative position control
2	AbsolutePosition	absolute position control

Table DTC41A0:

subindexed object data	Name	Meaning
0	Ramp Enable	Open the ramp
1	Ramp Disable	Close the ramp

Table DTD41A0:

subindexed object data	Name	Meaning
0	Positive Logic	direction outputs positive logic
1	Negative Logic	direction outputs negative logic

Table DTE41A0:

subindexed object data	Name	Meaning
0	OpenDrain	open-drain output
1	Difference 5V	Differential Output

Table DTF41A0:

subindexed object data	Name	Meaning
0	Duty cycle enable	Duty Cycle Adjustment Enable
1	Duty cycle disable	Duty Cycle Adjustment off, default 50%.

Table DTA41B0:

subindexed object data	Name	Meaning
0	20Hz~1.2kHz	
1	40Hz~2.4kHz	
2	50Hz~3kHz	
3	100Hz~6kHz	
4	140Hz~8.4kHz	
5	200Hz~12kHz	

5. Description of module register assignments

- DF20-C-MD-TCP-V1 adapter supports 02 (read discrete input), 03 (read holding register), 05 (write a single coil), 06 (write a single register), 15 (write multiple coils), 16 (Write multiple registers) six function codes. As shown, adapter register type and register address distribution.

Table 5-1-1

register description	Functional description	Starting address	end address
Holding registers	module input and output data areas	40001	42000
	module diagnostic data area	42001	42069
discrete input registers	Module discrete volume input data area	10001	11024
coil registers	module coil output data area	00001	01024

- The following table lists the modules supported by the DF20-C-MD-TCP-V1 adapter, the module type values, and the Modbus register types supported by the module.

Table 5-1-2

module symbols	module name	register operations
DF20-M-8DI-N	8-channel digital input module, 24VDC/NPN	Holding registers discrete input registers
DF20-M-8DI-P	8-channel digital input module, 24VDC/PNP	Holding registers discrete input registers
DF20-M-16DI-P	16-channel digital input module, 24VDC/PNP	Holding registers discrete input registers
DF20-M-16DI-N	16-channel digital input module, 24VDC/NPN	Holding registers discrete input registers
DF20-M-32DI-P	32-channel digital input module, 24VDC/PNP	Holding registers discrete input registers
DF20-M-32DI-N	32-channel digital input module, 24VDC/NPN	Holding registers discrete input registers
DF20-M-4DO-R	4-channel relay control module	Holding registers coil registers
DF20-M-8DO-N	8-channel digital output module, 24VDC/NPN	Holding registers coil registers
DF20-M-8DO-P	8-channel digital output module, 24VDC/PNP	Holding registers coil registers
DF20-M-16DO-P	16-channel digital output module, 24VDC/PNP	Holding registers coil registers
DF20-M-16DO-N	16-channel digital output module, 24VDC/NPN	Holding registers coil registers
DF20-M-32DO-P	32-channel digital output module, 24VDC/PNP	Holding registers coil registers
DF20-M-32DO-N	32-channel digital output module, 24VDC/NPN	Holding registers coil registers

DF20-M-8DIO-P	8-channel digital input and output hybrid module, 24VDC/PNP	Holding registers discrete input registers coil registers
DF20-M-8DIO-N	8-channel digital input and output hybrid module, 24VDC/NPN	Holding registers discrete input registers coil registers
DF20-M-4AI-U-0	4-channel analog input module, voltage type	Holding registers
DF20-M-4AI-U-1	4-channel analog input module, voltage type	Holding registers
DF20-M-4AI-U-4	4-channel analog input module, voltage type	Holding registers
DF20-M-4AI-I-2	4-channel analog input module, current type	Holding registers
DF20-M-4AI-I-3	4-channel analog input module, current type	Holding registers
DF20-M-4AI-U-5	4-channel analog input module, current type	Holding registers
DF20-M-8AI-U-4	8-channel analog input module, voltage type	Holding registers
DF20-M-8AI-I-5	8-channel analog input module, current type	Holding registers
DF20-M-4AO-U-0	4-channel analog output module, voltage type	Holding registers
DF20-M-4AO-U-1	4-channel analog output module, voltage type	Holding registers
DF20-M-4AO-U-4	4-channel analog output module, voltage type	Holding registers
DF20-M-4AO-I-2	4-channel analog output module, current type	Holding registers
DF20-M-4AO-I-3	4-channel analog output module, current type	Holding registers
DF20-M-4AO-I-5	4-channel analog output module, current type	Holding registers
DF20-M-8AO-I-5	8-channel analog output module, current type	Holding registers
DF20-M-8AO-U-4	8-channel analog output module, voltage type	Holding registers
DF20-M-2LC-S-5	2-channel pressure detection module	Holding registers
DF20-M-2RTD-PT	2-channel RTD measuring module	Holding registers
DF20-M-4RTD-PT	4-channel RTD measuring module	Holding registers
DF20-M-4TC-KETJ	4-channel thermocouple measurement module	Holding registers
DF20-M-8TC-KETJ	8-channel thermocouple measurement module	Holding registers
DF20-M-1CNT-EL-4	1-channel encoder input module, 24VDC	Holding registers
DF20-M-1CNT-EL-5	1-channel encoder input module, 5VDC	Holding registers
DF20-M-2CNT-PIL-4	2-channel pulse counting module, 24VDC	Holding registers
DF20-M-2CNT-PIL-5	2-channel pulse counting module, 5VDC	Holding registers
DF20-M-2CNT-EL-5	2-channel encoder input module, 5VDC	Holding registers
DF20-M-2CNT-EL-4	2-channel encoder input module, 24VDC	Holding registers
DF20-M-2PWM	2-channel pulse output module, 24VDC	Holding registers
ERROR_MOD	unsupported modules	/

- As shown in Table 5-1-3, the register distribution of each module is listed according to the module order table in Table 5-1-2.

Serial number	Model	address area	data size	Occupancy address	Remarks
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Serial number	Model	address area	data size	Occupancy address	Remarks
0	DF20-C-MD-TCP-V1	system diagnostic information. Holding register:42001~42069	69word	Holding register address 42001	module count information
				Holding register address 42002	The disconnected output attribute that
				Holding register address 42003	module error messages
				Holding register address 42004~42035	module type information
				Holding register address 42036	Modbus configuration long connection time high 16 bits
				Holding register address 42037	Modbus configuration long connection time low 16 bits
				Holding register address 42038~42069	module response time
1	DF20-M-8DI-N	Holding registers. 40001~42000	1word	Holding register address 40001	Channel 1 - Channel 8 digital inputs
		Discrete Input Registers. 10001~11024	8bit	discrete input register address 10001~10008	Channel 1 - Channel 8 digital inputs
2	DF20-M-8DI-P	Holding registers. 40001~42000	1word	Holding register address 40002	Channel 1 - Channel 8 digital inputs
		Discrete Input Registers. Discrete Input Registers. 10001~11024	8bit	discrete input register address 10009~10016	Channel 1 - Channel 8 digital inputs
3	DF20-M-16DI-P	Holding registers. 40001~42000	1word	Holding register address. 40003	Channel 1 - Channel 16 digital inputs
		Discrete Input Registers. 10001~11024	16bit	Discrete Input Register Address : 10017~10032	Channel 1 - Channel 16 digital inputs
4	DF20-M-16DI-N	Holding registers. 40001~42000	1word	Holding register address. 40004	Channel 1 - Channel 16 digital inputs
		Discrete Input Registers. 10001~11024	16bit	Discrete Input Register Address : 10033~10048	Channel 1 - Channel 16 digital inputs
5	DF20-M-32DI-P	Holding registers. 40001~42000	2word	Holding register address. 40005~40006	Channel 1 - Channel 32 digital inputs
		Discrete Input Registers. 10001~11024	32bit	Discrete Input Register Address : 10049~10080	Channel 1 - Channel 32 digital inputs
6	DF20-M-32DI-N	Holding registers. 40001~42000	2word	Holding register address. 40007~40008	Channel 1 - Channel 32 digital inputs
		Discrete Input Registers. 10001~11024	32bit	Discrete Input Register Address : 10089~10112	Channel 1 - Channel 32 digital inputs
7	DF20-M-4DO-R	Holding registers. 40001~42000	1word	Holding register address. 40009	Channel 1 - Channel 4 digital inputs
		Discrete Input Registers. 10001~11024	4bit	Discrete Input Register Address : 10113~10120 of which 10113~10116 are valid. 10117~10120 are not used;	Channel 1 - Channel 4 digital inputs
8	DF20-M-8DO-N	Holding registers. 40001~42000	1word	Holding register address. 40010	Channel 1 - Channel 8 digital outputs
		Coil Output Registers. 00001~01024	8bit	Coil register address : 00001~00008	Channel 1 - Channel 8 digital outputs
9	DF20-M-8DO-P	Holding registers. 40001~42000	1word	Holding register address. 40011	Channel 1 - Channel 8 digital outputs
		Coil Output Registers.	8bit	Coil register address : 00009~00016	Channel 1 - Channel 8 digital outputs

Serial number	Model	address area	data size	Occupancy address	Remarks
		00001~01024			
10	DF20-M-16DO-P	Holding registers. 40001~42000	1word	Holding register address. 40012	Channel 1 - Channel 16 digital outputs
		Coil Output Registers. 00001~01024	16bit	Coil register address : 00017~00032	Channel 1 - Channel 16 digital outputs
11	DF20-M-16DO-N	Holding registers. 40001~42000	1word	Holding register address. 40013	Channel 1 - Channel 16 digital outputs
		Coil Output Registers. 00001~01024	16bit	Coil register address : 00033~00048	Channel 1 - Channel 16 digital outputs
12	DF20-M-32DO-P	Holding registers. 40001~42000	2word	Holding register address. 40014~40015	Channel 1 - Channel 32 digital outputs
		Coil Output Registers. 00001~01024	32bit	Coil register address : 00049~00080	Channel 1 - Channel 32 digital outputs
13	DF20-M-32DO-N	Holding registers. 40001~42000	2word	Holding register address. 40016~40017	Channel 1 - Channel 32 digital outputs
		Coil Output Registers. 00001~01024	32bit	Coil register address : 00081~00112	Channel 1 - Channel 32 digital outputs
14	DF20-M-8DIO-P	Holding registers. 40001~42000	2word	Holding register address. 40018	Channel 1 - Channel 8 digital inputs
				Holding register address. 40019	Channel 1 - Channel 8 digital outputs
		Discrete Input Registers. 10001~11024	8bit	discrete input register address 10121~10128	Channel 1 - Channel 8 digital inputs
		Coil Output Registers. 00001~01024	8bit	Coil register address : 00113~00120	Channel 1 - Channel 8 digital outputs
15	DF20-M-8DIO-N	Holding registers. 40001~42000	2word	Holding register address. 40020	Channel 1 - Channel 8 digital inputs
				Holding register address. 40021	Channel 1 - Channel 8 digital outputs
		Discrete Input Registers. 10001~11024	8bit	discrete input register address 10129~10136	Channel 1 - Channel 8 digital inputs
		Coil Output Registers. 00001~01024	8bit	Coil register address : 00121~00128	Channel 1 - Channel 8 digital outputs
16	DF20-M-4AI-U-0	Holding registers. 40001~42000	4word	Holding register address. 40022~40025	Channel 1 - Channel 4 Voltage input
17	DF20-M-4AI-U-1	Holding registers. 40001~42000	4word	Holding register address. 40026~40029	Channel 1 - Channel 4 Voltage input
18	DF20-M-4AI-U-4	Holding registers. 40001~42000	4word	Holding register address. 40030~40033	Channel 1 - Channel 4 Voltage input
19	DF20-M-4AI-I-2	Holding registers. 40001~42000	4word	Holding register address. 40034~40037	Channel 1 - Channel 4 Current input
20	DF20-M-4AI-I-3	Holding registers. 40001~42000	4word	Holding register address. 40038~40041	Channel 1 - Channel 4 Current input
21	DF20-M-4AI-U-5	Holding registers. 40001~42000	4word	Holding register address. 40042~40045	Channel 1 - Channel 4 Current input
22	DF20-M-8AI-U-4	Holding registers. 40001~42000	8word	Holding register address. 40046~40053	Channel 1 - Channel 8 Voltage input
23	DF20-M-8AI-I-5	Holding registers. 40001~42000	8word	Holding register address. 40053~40061	Channel 1 - Channel 8 Current input
24	DF20-M-4AO-U-0	Holding registers. 40001~42000	4word	Holding register address. 40062~40065	Channel 1 - Channel 4 Voltage output
25	DF20-M-4AO-U-1	Holding registers. 40001~42000	4word	Holding register address. 40066~40069	Channel 1 - Channel 4 Voltage output
26	DF20-M-4AO-U-4	Holding registers. 40001~42000	4word	Holding register address. 40069~40073	Channel 1 - Channel 4 Voltage output

Serial number	Model	address area	data size	Occupancy address	Remarks
27	DF20-M-4AO-I-2	Holding registers. 40001~42000	4word	Holding register address. 40074~40077	Channel 1 - Channel 4 Current output
28	DF20-M-4AO-I-3	Holding registers. 40001~42000	4word	Holding register address. 40078~40081	Channel 1 - Channel 4 Current output
29	DF20-M-4AO-I-5	Holding registers. 40001~42000	4word	Holding register address. 40082~40085	Channel 1 - Channel 4 Current output
30	DF20-M-8AO-I-5	Holding registers. 40001~42000	8word	Holding register address. 40086~40093	Channel 1 - Channel 8 Current output
31	DF20-M-8AO-U-4	Holding registers. 40001~42000	8word	Holding register address. 40094~40101	Channel 1 - Channel 8 Voltage output
32	DF20-M-2LC-S-5	Holding registers. 40001~42000	2word	Holding register address. 40102~40103	Channel 1 - Channel 2 Pressure Detection Input
33	DF20-M-2RTD-PT	Holding registers. 40001~42000	2word	Holding register address. 40104~40105	Channel 1 - Channel 2 RTD measurement input
34	DF20-M-4RTD-PT	Holding registers. 40001~42000	4word	Holding register address. 40106~40109	Channel 1 - Channel 4 RTD measurement input
35	DF20-M-4TC-KETJ	Holding registers. 40001~42000	4word	Holding register address. 40110~40113	Channel 1 - Channel 4 Thermocouple measurement input
36	DF20-M-8TC-KETJ	Holding registers. 40001~42000	8word	Holding register address. 40114~40121	Channel 1 - Channel 8 Thermocouple measurement input
37	DF20-M-1CNT-EL-4	Holding registers. 40001~42000	6word	Holding register address. 40122	Channel 1 outputs the control word
				Holding register address. 40123	Channel 1 input status word
				Holding register address. 40124	Channel 1 input count value 16 bits high
				Holding register address. 40125	Channel 1 input count value 16 bits lower
				Holding register address. 40126	Channel 1 input latch value 16 bits high
				Holding register address. 40127	Channel 1 input latch value 16 bits lower
38	DF20-M-1CNT-EL-5	Holding registers. 40001~42000	6word	Holding register address. 40128	Channel 1 outputs the control word
				Holding register address. 40129	Channel 1 input status word
				Holding register address. 40130	Channel 1 input count value 16 bits high
				Holding register address. 40131	Channel 1 input count value 16 bits lower
				Holding register address. 40132	Channel 1 input latch value 16 bits high
				Holding register address. 40133	Channel 1 input latch value 16 bits lower
39	DF20-M-2CNT-PIL-4	Holding registers. 40001~42000	16word	Holding register address. 40134	Channel 1 outputs the control word
				Holding register address. 40135	Channel 1 outputs the high 16 bits of the comparison value
				Holding register address. 40136	Channel 1 outputs the lower 16 bits of the comparison value
				Holding register address. 40137	Channel 2 outputs the control word
				Holding register address. 40138	Channel 2 outputs the high 16 bits of the comparison value
				Holding register address. 40139	Channel 2 outputs the lower 16 bits of the comparison value
				Holding register address. 40140	Channel 1 input status word
				Holding register address. 40141	Channel 1 input count value 16 bits high
				Holding register address. 40142	Channel 1 input count value 16 bits lower

Serial number	Model	address area	data size	Occupancy address	Remarks
				Holding register address. 40143	Channel 1 input latch value 16 bits high
				Holding register address. 40144	Channel 1 input latch value 16 bits lower
				Holding register address. 40145	Channel 2 input status word
				Holding register address. 40146	Channel 2 input count value 16 bits high
				Holding register address. 40147	Channel 2 input count value 16 bits lower
				Holding register address. 40148	Channel 2 input latch value 16 bits high
				Holding register address. 40149	Channel 2 input latch value 16 bits lower
40	DF20-M-2CNT-PIL-5	Holding registers. 40001~42000	16word	Holding register address. 40150	Channel 1 outputs the control word
				Holding register address. 40151	Channel 1 outputs the high 16 bits of the comparison value
				Holding register address. 40152	Channel 1 outputs the lower 16 bits of the comparison value
				Holding register address. 40153	Channel 2 outputs the control word
				Holding register address. 40154	Channel 2 outputs the high 16 bits of the comparison value
				Holding register address. 40155	Channel 2 outputs the lower 16 bits of the comparison value
				Holding register address. 40156	Channel 1 input status word
				Holding register address. 40157	Channel 1 input count value 16 bits high
				Holding register address. 40158	Channel 1 input count value 16 bits lower
				Holding register address. 40159	Channel 1 input latch value 16 bits high
				Holding register address. 40160	Channel 1 input latch value 16 bits lower
				Holding register address. 40161	Channel 2 input status word
				Holding register address. 40162	Channel 2 input count value 16 bits high
				Holding register address. 40163	Channel 2 input count value 16 bits lower
				Holding register address. 40164	Channel 2 input latch value 16 bits high
				Holding register address. 40165	Channel 2 input latch value 16 bits lower
41	DF20-M-2CNT-EL-5	Holding registers. 40001~42000	16word	Holding register address. 40166	Channel 1 outputs the control word
				Holding register address. 40167	Channel 1 outputs the high 16 bits of the comparison value
				Holding register address. 40168	Channel 1 outputs the lower 16 bits of the comparison value
				Holding register address. 40169	Channel 2 outputs the control word
				Holding register address. 40170	Channel 2 outputs the high 16 bits of the comparison value
				Holding register address. 40171	Channel 2 outputs the lower 16 bits of the comparison value
				Holding register address. 40172	Channel 1 input status word
				Holding register address. 40173	Channel 1 input count value 16 bits high

Serial number	Model	address area	data size	Occupancy address	Remarks
				Holding register address. 40174	Channel 1 input count value 16 bits lower
				Holding register address. 40175	Channel 1 input latch value 16 bits high
				Holding register address. 40176	Channel 1 input latch value 16 bits lower
				Holding register address. 40177	Channel 2 input status word
				Holding register address. 40178	Channel 2 input count value 16 bits high
				Holding register address. 40179	Channel 2 input count value 16 bits lower
				Holding register address. 40180	Channel 2 input latch value 16 bits high
				Holding register address. 40181	Channel 2 input latch value 16 bits lower
42	DF20-M-2CNT-EL-4	Holding registers. 40001~42000	16word	Holding register address. 40182	Channel 1 outputs the control word
				Holding register address. 40183	Channel 1 outputs the high 16 bits of the comparison value
				Holding register address. 40184	Channel 1 outputs the lower 16 bits of the comparison value
				Holding register address. 40185	Channel 2 outputs the control word
				Holding register address. 40186	Channel 2 outputs the high 16 bits of the comparison value
				Holding register address. 40187	Channel 2 outputs the lower 16 bits of the comparison value
				Holding register address. 40188	Channel 1 input status word
				Holding register address. 40189	Channel 1 input count value 16 bits high
				Holding register address. 40190	Channel 1 input count value 16 bits lower
				Holding register address. 40191	Channel 1 input latch value 16 bits high
				Holding register address. 40192	Channel 1 input latch value 16 bits lower
				Holding register address. 40193	Channel 2 input status word
				Holding register address. 40194	Channel 2 input count value 16 bits high
				Holding register address. 40195	Channel 2 input count value 16 bits lower
				Holding register address. 40196	Channel 2 input latch value 16 bits high
				Holding register address. 40197	Channel 2 input latch value 16 bits lower
43	DF20-M-2PWM	Holding registers. 40001~42000	14word	Holding register address. 40197	Channel 1 control word
				Holding register address. 40198	Channel 1 duty cycle setting
				Holding register address. 40199	Target position setting in channel 1 pulse plus direction positioning mode, or frequency setting 16 bits higher in PWM mode
				Holding register address. 40200	Channel 1 pulse plus direction positioning mode target position setting, or frequency setting lower 16 bits in PWM mode
				Holding register address. 40201	channel 2 control word

Serial number	Model	address area	data size	Occupancy address	Remarks
				Holding register address. 40202	Channel 2 duty cycle setting
				Holding register address. 40203	Target position setting in channel 2 pulse plus direction positioning mode, or frequency setting 16 bits higher in PWM mode
				Holding register address. 40204	Channel 2 pulse plus direction positioning mode target position setting, or frequency setting lower 16 bits in PWM mode
				Holding register address. 40205	Channel 1 status word
				Holding register address. 40206	Actual position of channel 1 or high 16 bits of PWM output number
				Holding register address. 40207	Actual position of channel 1 or lower 16 bits of PWM output number
				Holding register address. 40208	channel 2 status word
				Holding register address. 40209	Actual position of channel 2 or high 16 bits of PWM output number
				Holding register address. 40210	Actual position of channel 2 or lower 16 bits of PWM output number

6. Description of software configuration

6.1 CODESYS configuration process

- This chapter specifically uses CODESYS V3.5 SP18 Patch 3 as the configuration software to introduce the use of the adapter DF20-C-MD-TCP-V1.

6.1.1 Project creation

6.1.1.1 New construction

- As shown in the figure below, create a new project, enter the project name and create the project.

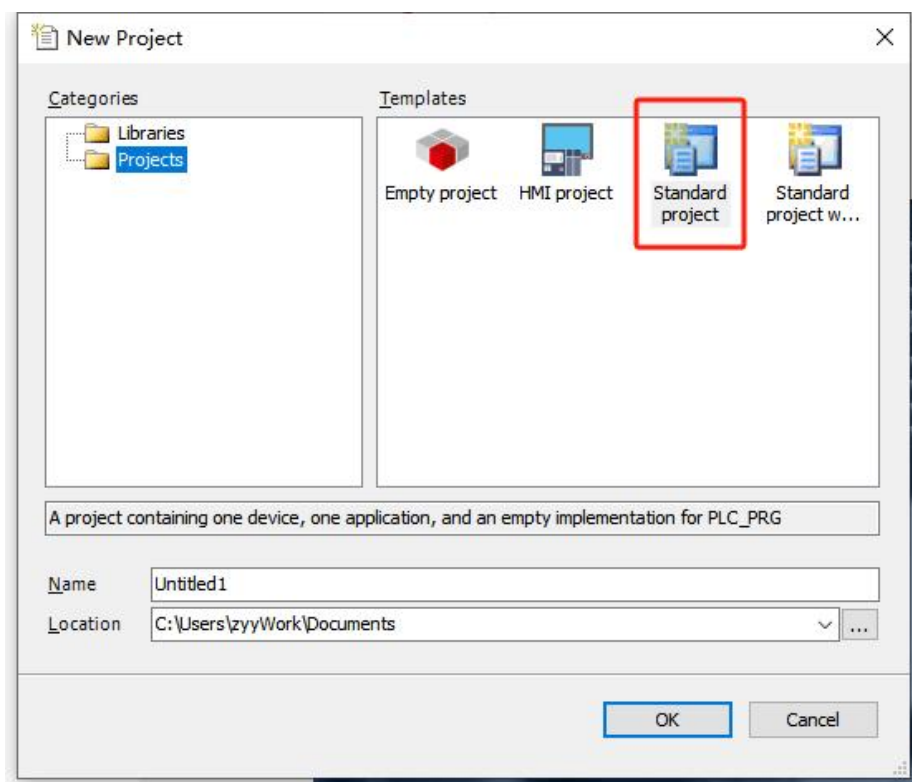


Figure 6-1- 1

6.1.1.2 Adding controllers

- Select the controller you are using and add it.

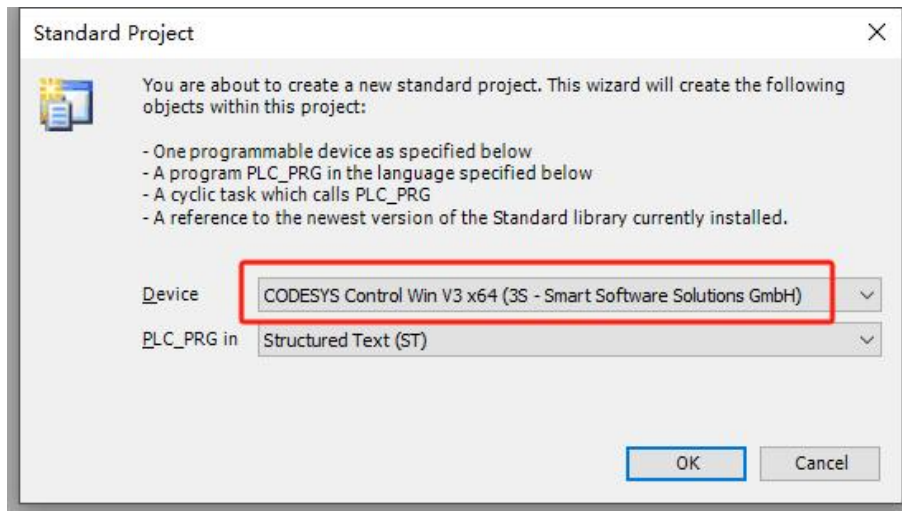


Figure 6-1- 2

- As shown in the figure below, find the controller you are using and double click to connect it.

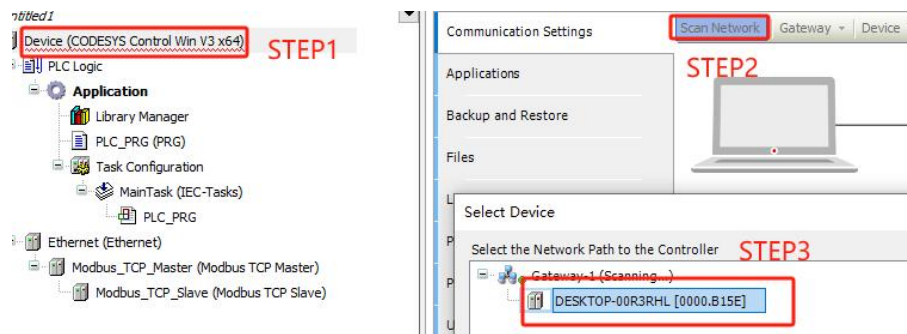


Figure 6-1- 3

6.1.1.3 Connection adapter

- Right-click the item and select Add Device.

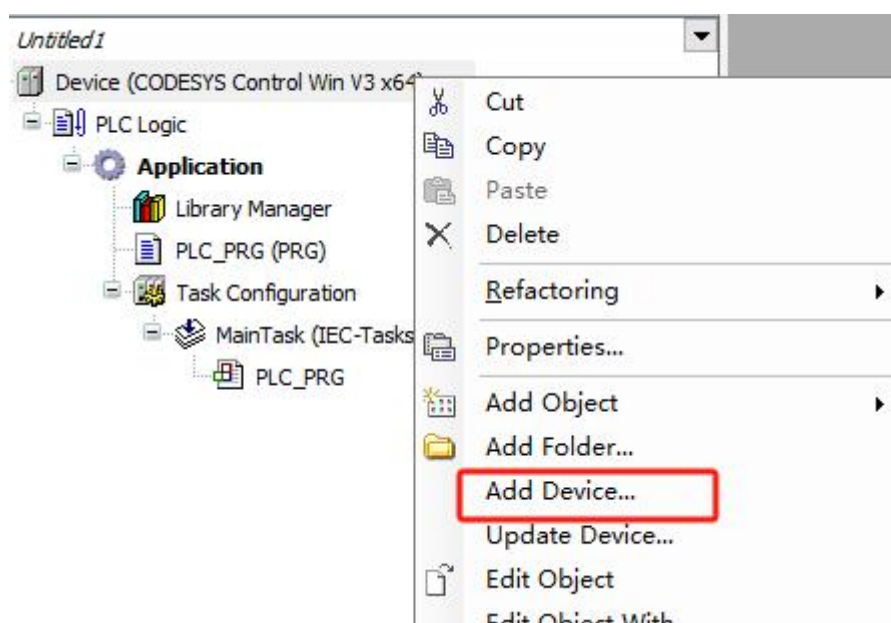


Figure 6-1- 4

- After selecting all suppliers, find Ethernet and double-click to add.



Figure 6-1- 5

- Right-click Ethernet and click Add Device.

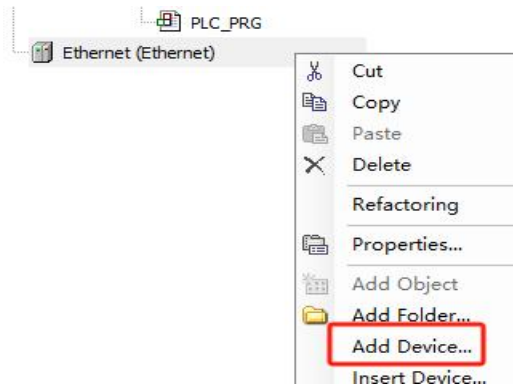


Figure 6-1- 6

- Find Modbus TCP Master and double-click to add it.



Figure 6-1- 7

- Right-click Modbus TCP Master and click Add Device.

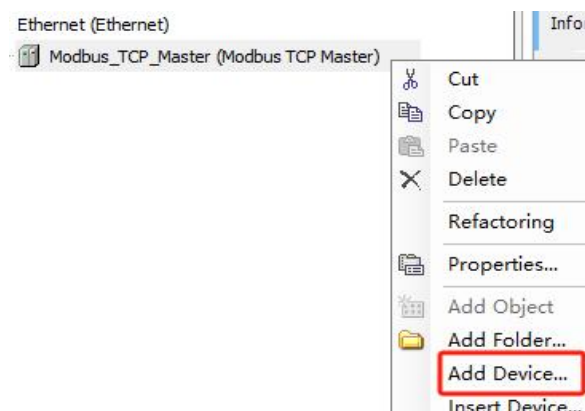


Figure 6-1- 8

- Double-click to add Modbus TCP Slave.

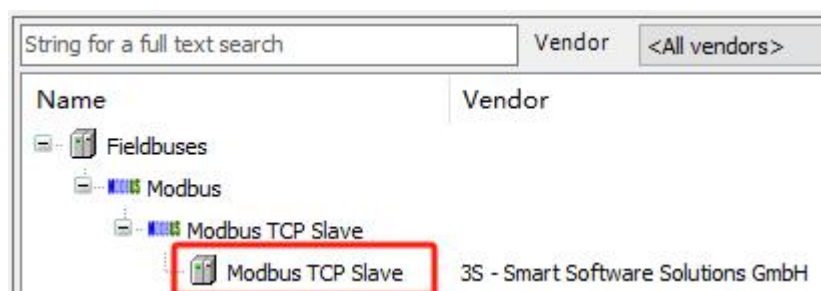


Figure 6-1- 9

- Double-click Ethernet and select the network card connected to the controller.

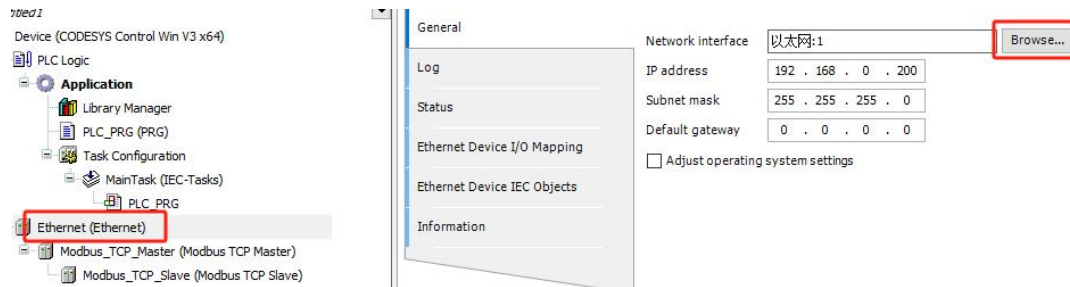


Figure 6-1- 10

- Double-click Modbus_TCP_Slave and set the Modbus slave IP as the adapter IP. Pay attention to adapter IP requirements and controller IP

In the same network segment, it has been set to 192.168.0.2 in advance. Please refer to the method of modifying the adapter IP.[Chapter IV, subsection 2](#)。

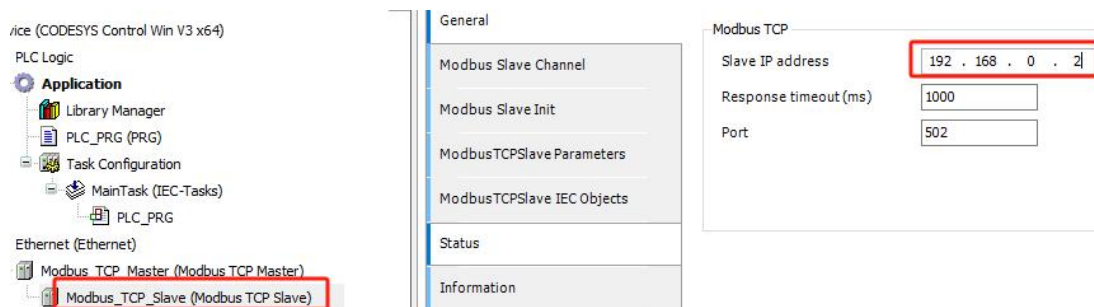


Figure 6-1- 11

- Click to log in and download the configuration to the controller. After the download is complete, click Start. You can see that the RUN light of the adapter is always on, and the software

No error is reported, indicating that the connection has been successfully established.



Figure 6-1- 12

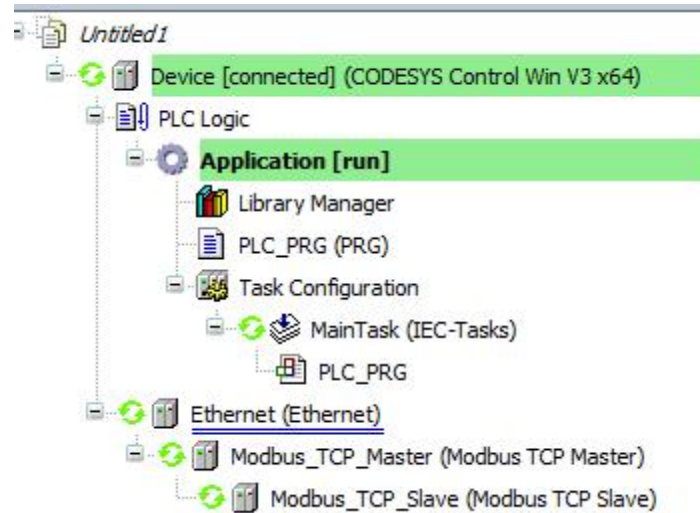


Figure 6-1- 13

6.1.1.4 Modbus Slave channel addition

- Enter the Slave Channel Configuration interface and click Add Channel.

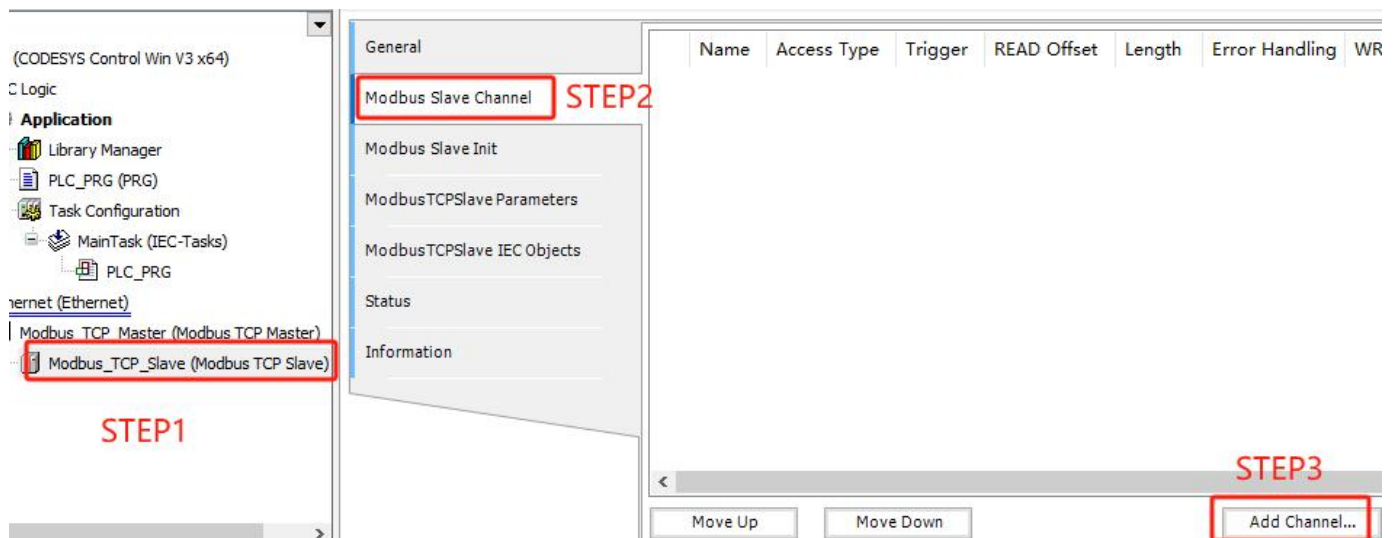
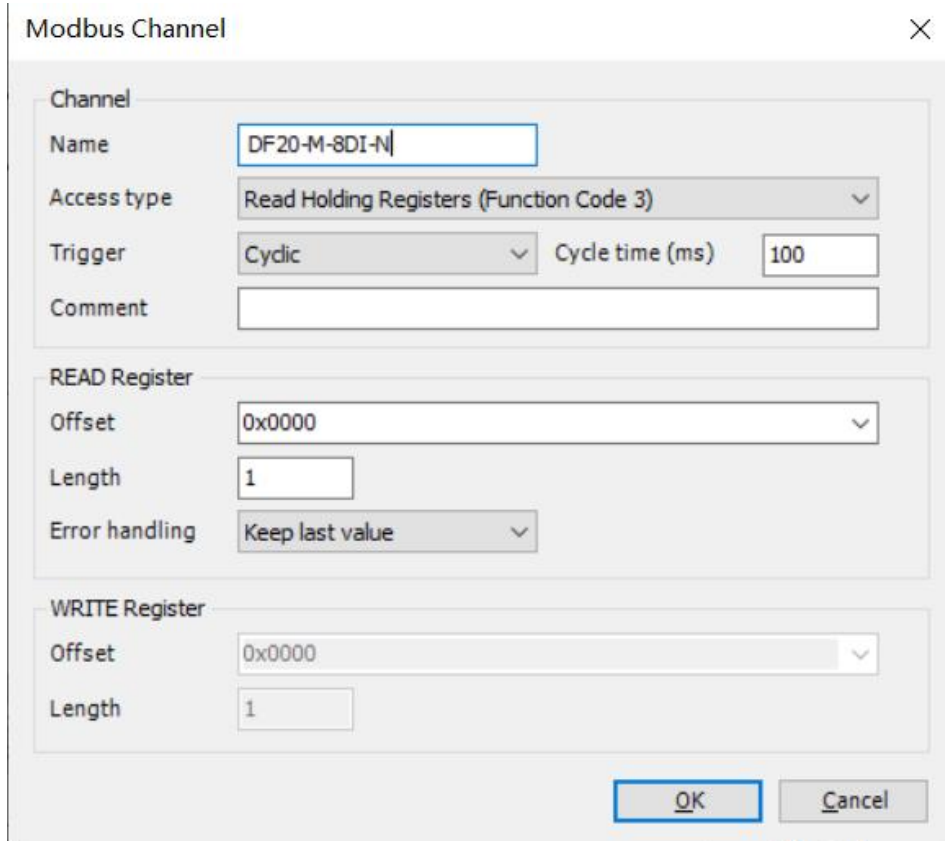


Figure 6-1- 14

- The hardware for demonstration connection is DF20-C-MD-TCP-V1 + DF20-M-8DI-N + DF20-M-8DO-N. Add the first channel as shown in the figure below, occupying 1byte and reserve 1byte, totaling 1word.



Modbus Channel

Channel

Name: DF20-M-8DI-N

Access type: Read Holding Registers (Function Code 3)

Trigger: Cyclic Cycle time (ms): 100

Comment:

READ Register

Offset: 0x0000

Length: 1

Error handling: Keep last value

WRITE Register

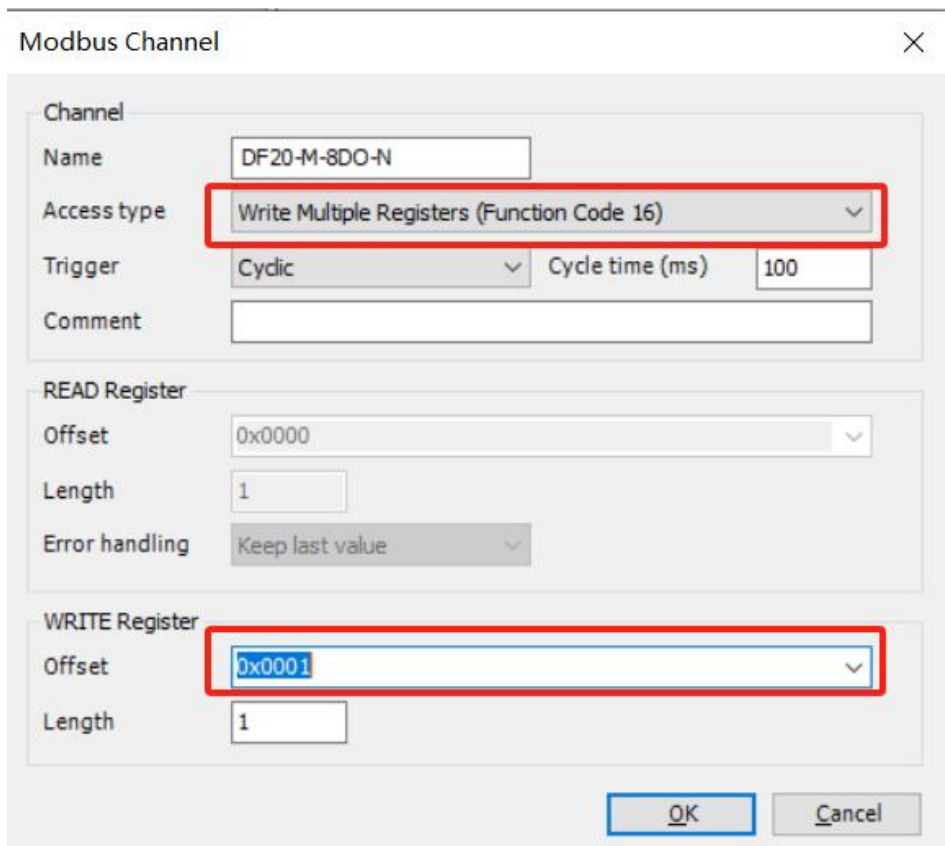
Offset: 0x0000

Length: 1

OK Cancel

Figure 6-1- 15

- Add a second channel as shown below, adding an offset of 1 word. Occupy 1 byte, reserve 1 byte, total 1 word.



Modbus Channel

Channel

Name: DF20-M-8DO-N

Access type: Write Multiple Registers (Function Code 16)

Trigger: Cyclic Cycle time (ms): 100

Comment:

READ Register

Offset: 0x0000

Length: 1

Error handling: Keep last value

WRITE Register

Offset: 0x0001

Length: 1

OK Cancel

Figure 6-1- 16

- Enter the I/O mapping interface and change the always update variable to enable 1.

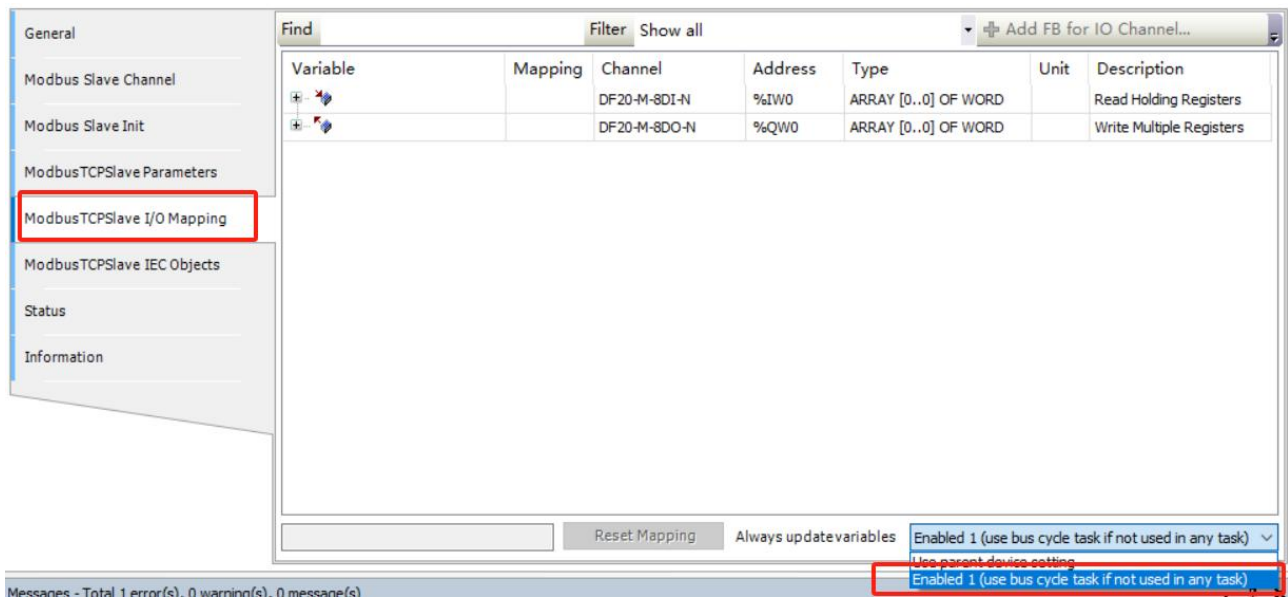


Figure 6-1- 17

- After adding all channels, you need to re-download them to the controller.

6.1.1.5 commissioning and testing

- Enter the I/O mapping interface as shown in the figure below to monitor and modify the data in each channel.

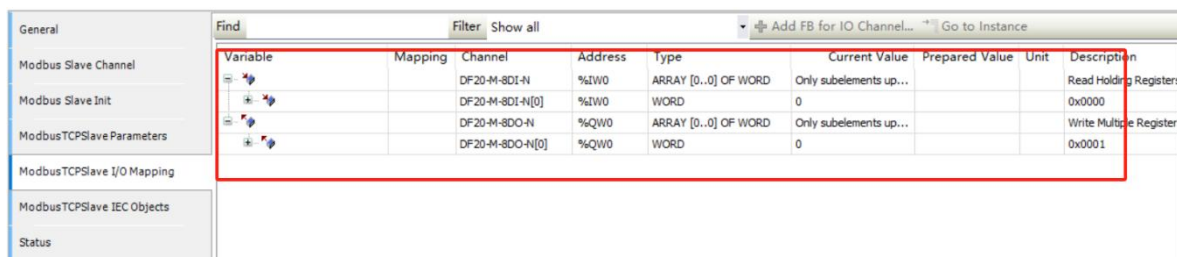


Figure 6-1- 18

- As shown in the figure below, writing "65535" enables all channel outputs of the DF20-M-8DO-N module.

Variable	Mapping	Channel	Address	Type	Current Value	Prepared Value	Unit
		DF20-M-8DI-N	%IW0	ARRAY [0..0] OF WORD	Only subelements updated		
		DF20-M-8DI-N[0]	%IW0	WORD	0		
		DF20-M-8DO-N	%QW0	ARRAY [0..0] OF WORD	Only subelements updated		
		DF20-M-8DO-N[0]	%QW0	WORD	65535	65535	
		Bit0	%QX0.0	BOOL	TRUE		
		Bit1	%QX0.1	BOOL	TRUE		
		Bit2	%QX0.2	BOOL	TRUE		
		Bit3	%QX0.3	BOOL	TRUE		
		Bit4	%QX0.4	BOOL	TRUE		
		Bit5	%QX0.5	BOOL	TRUE		
		Bit6	%QX0.6	BOOL	TRUE		
		Bit7	%QX0.7	BOOL	TRUE		
		Bit8	%QX1.0	BOOL	TRUE		
		Bit9	%QX1.1	BOOL	TRUE		
		Bit10	%QX1.2	BOOL	TRUE		

Figure 6-1- 19

- Input a valid signal into the first channel of DF20-C-MD-TCP-V1, and you can see the software interface as shown below.

Variable	Mapping	Channel	Address	Type	Current Value	Prepared Value
		DF20-M-8DI-N	%IW0	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DI-N[0]	%IW0	WORD	1	
		DF20-M-8DO-N	%QW0	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DO-N[0]	%QW0	WORD	65535	65535
		Bit0	%QX0.0	BOOL	TRUE	
		Bit1	%QX0.1	BOOL	TRUE	
		Bit2	%QX0.2	BOOL	TRUE	

Figure 6-1- 20

6.1.2 Adapter Usage Routines

- For the wiring diagram of the adapter, please refer to [Chapter II, subsection 2](#). The example uses DF20-C-MD-TCP-V1 + DF20-M-8DI-N + DF20-M-8DO-N topology. Add all channels as shown in the figure below. The base address of the configuration software is 40000, and the Sys_DiagInfo_HoldRegBlock address starts from 42001, so 2000 (16#07D0) registers need to be offset.

Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
0 Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		

Figure 6-1- 21

- For specific diagnostic information, please refer to [Chapter II, subsection 4](#).
- Holding Register Block Data Structure Definition.

Table 6.1 1

HoldReg	Byte	Format	Description	Sys_DiagInfo_HoldRegBlock Size:69
0	IB0	Word	ModuleNum	
	IB1			
1	IB2	Word	Output on Fieldbus Error	
	IB3			
2	IB4	Word	ModuleError	
	IB5			
3	IB6	Word	No.1 Module Type Info	
	IB7			
4	IB8	Word	No.2 Module Type Info	
	IB9			
⋮				
34	IB68	Word	No.32 Module Type Info	
	IB69			
35	IB70	Word	Modbus Connect Time[16..31]	
	IB71			
36	IB72	Word	Modbus Connect Time[0..15]	
	IB73			

37	IB74	Word	No.1 Modbus Polling Time	
	IB75			
38	IB76	Word	No.2 Modbus Polling Time	
	IB77			
⋮				
68	IB136	Word	No.32 Modbus Polling Time	
	IB137			

- ModuleNum: number of modules, number of modules attached to the adapter. For example, if there are 5 modules attached to the bus, the value of ModuleNum is 5;
- Output on Fieldbus Error: adapter disconnection output attribute (1: disconnection hold output 0: disconnection clear output);
- ModuleError: Module error information (high 8 bits 1: error 0: no error low 8 bit module serial number, such as the first module internal bus communication error, the error code is 0x0101, the second module communication error, the error code is 0x0102, and so on);
- Modbus Connect Time: The duration from the establishment of this ModbusTCP connection. Cleared when the connection is disconnected and counted again when the connection is restored; Modbus Connect Time[0..15] low 16-bit data, Modbus Connect Time[16..31] high 16-bit data;
- Modbus Polling Time: Record the time period for data returned from the master station to the module. No.1 Modbus Polling Time is the response time of module 1, and so on.

6.1.2.1 Sys_DiagInfo system diagnostic information

- As shown in the figure below, the value in the ModuleError register is "16#0000" when the adapter is running normally.

Channel	Address	Type	Current Value
Sys_DiagInfo	%IW0	ARRAY [0..68] OF WORD	Only subelements up...
Sys_DiagInfo[0]	%IW0	WORD	16#0000
Sys_DiagInfo[1]	%IW1	WORD	16#0001
Sys_DiagInfo[2]	%IW2	WORD	16#0000

Figure 6-1- 22

- When the second card is removed, the value changes to "16#0102", indicating that there is a communication error in the second module. Remove the first card.

The value changes to "16#0101", indicating a communication error in the first module. After fixing the error, you need to reboot the adapter to eliminate the alarm.

Channel	Address	Type	Current Value
Sys_DiagInfo	%IW0	ARRAY [0..68] OF WORD	Only subelements up...
Sys_DiagInfo[0]	%IW0	WORD	16#0000
Sys_DiagInfo[1]	%IW1	WORD	16#0001
Sys_DiagInfo[2]	%IW2	WORD	16#0102

Figure 6-1- 23

Channel	Address	Type	Current Value
Sys_DiagInfo	%IW0	ARRAY [0..68] OF WORD	Only subelements up...
Sys_DiagInfo[0]	%IW0	WORD	16#0000
Sys_DiagInfo[1]	%IW1	WORD	16#0001
Sys_DiagInfo[2]	%IW2	WORD	16#0101

Figure 6-1- 24

6.1.2.2 Bus Error Adapter Status

- As shown in the figure below, you can view the current configuration of the bus error adapter state, currently "1", that is, disconnected to maintain the output, does not support direct modification of the register value to change the current state.

Channel	Address	Type	Current Value
Sys_DiagInfo	%IW0	ARRAY [0..68] OF WORD	Only subelements up...
Sys_DiagInfo[0]	%IW0	WORD	16#0000
Sys_DiagInfo[1]	%IW1	WORD	16#0001

Figure 6-1- 25

- This status can be modified in the adapter web configuration. For details, please refer to [Subsection 4.1](#).

Network Info

MAC Address: 02:14:62:7E:24:5C IP Address: 192.168.0.2 Subnet mask: 255.255.255.0

GateWay: 192.168.0.1 Output on Fieldbus Error: Hold last value All outputs off Hold last value Save&Restart

Tips: Please set the dial-switch to 0 before submitting

Figure 6-1- 26

6.1.2.3 Obtaining the module software version

- The adapter version information can only be viewed on the web page, please refer to [Subsection 4.1](#).

Network Info

MAC Address: 02:08:91:C4:8A:10 IP Address: 192.168.1.254 Subnet mask: 255.255.255.0

GateWay: 192.168.1.1 Output on Fieldbus Error: Hold last value Save&Restart

Tips: Please set the dial-switch to 0 before submitting!

Coupler Info

Modbus/TCP Coupler Firmware Version: 1.0

Figure 6-1- 27

6.1.3 Digital Module Usage Routines

- This routine uses DF20-C-MD-TCP-V1+DF20-M-8DI-P+DF20-M-16DI-P+DF20-M-32DI-P+DF20-M-8DO-P+DF20-M-16DO-P+DF20-M-32DO-P+DF20-M-8DIO-P topology

Construct. Add all channels as shown below.

	Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
0	Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		
1	DF20-M-8DI-P	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0000	1	Keep last value		
2	DF20-M-16DI-P	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0001	1	Keep last value		
3	DF20-M-32DI-P	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0002	2	Keep last value		
4	DF20-M-8DO-P	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0001	1
5	DF20-M-16DO-P	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0001	1
6	DF20-M-32DO-P	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0002	2
7	DF20-M-8DIO-P	Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0003	1	Keep last value	16#0003	1

Figure 6-1- 28

6.1.3.1 DF20-M-8DI-P digital input module

- This module can set the input filter in the web page. The setting method is as shown in the figure below. The default is 3ms.

Parameter

Input Filter: ms Update

Setting Range:0~40ms

Figure 6-1- 29

- You can view each channel input data as shown below.

Mapping	Channel	Address	Type	Current Value
	Sys_DiagInfo	%IW0	ARRAY [0..68] OF WORD	Only subelements updated
	DF20-M-8DI-P	%IW69	ARRAY [0..0] OF WORD	Only subelements updated
	DF20-M-8DI-P[0]	%IW69	WORD	0
	Bit0	%IX138.0	BOOL	FALSE
	Bit1	%IX138.1	BOOL	FALSE
	Bit2	%IX138.2	BOOL	FALSE
	Bit3	%IX138.3	BOOL	FALSE
	Bit4	%IX138.4	BOOL	FALSE
	Bit5	%IX138.5	BOOL	FALSE
	Bit6	%IX138.6	BOOL	FALSE
	Bit7	%IX138.7	BOOL	FALSE
	Bit8	%IX139.0	BOOL	FALSE
	Bit9	%IX139.1	BOOL	FALSE
	Bit10	%IX139.2	BOOL	FALSE
	Bit11	%IX139.3	BOOL	FALSE
	Bit12	%IX139.4	BOOL	FALSE

Figure 6-1- 30

6.1.3.2DF20-M-16DI-P digital input module

- This module can set the input filter in the web page. The setting method is as shown in the figure below. The default is 3ms.

Parameter

Input Filter: ms Update

Setting Range:0~40ms

Figure 6-1- 31

- You can view each channel input data as shown below.

	Bit15	%IX139.7	BOOL	FALSE
	DF20-M-16DI-P	%IW70	ARRAY [0..0] OF WORD	Only subelements updated
	DF20-M-16DI-P[0]	%IW70	WORD	0
	Bit0	%IX140.0	BOOL	FALSE
	Bit1	%IX140.1	BOOL	FALSE
	Bit2	%IX140.2	BOOL	FALSE
	Bit3	%IX140.3	BOOL	FALSE
	Bit4	%IX140.4	BOOL	FALSE
	Bit5	%IX140.5	BOOL	FALSE
	Bit6	%IX140.6	BOOL	FALSE
	Bit7	%IX140.7	BOOL	FALSE
	Bit8	%IX141.0	BOOL	FALSE
	Bit9	%IX141.1	BOOL	FALSE
	Bit10	%IX141.2	BOOL	FALSE
	Bit11	%IX141.3	BOOL	FALSE
	Bit12	%IX141.4	BOOL	FALSE
	Bit13	%IX141.5	BOOL	FALSE

Figure 6-1- 32

6.1.3.3 DF20-M-32DI-P digital input module

- This module can set the input filter in the web page. The setting method is as shown in the figure below. The default is 3ms.

Parameter

Input Filter: ms Update

Setting Range:0~40ms

Figure 7-1- 33

- You can view each channel input data as shown below.

	DF20-M-32DI-P	%IW71	ARRAY [0..1] OF WORD	Only subelements updated	
	DF20-M-32DI-P[0]	%IW71	WORD	0	
	DF20-M-32DI-P[1]	%IW72	WORD	0	

Figure 6-1- 34

6.1.3.4 DF20-M-8DO-P digital output module

- Each channel output can be enabled as shown below.

DF20-M-8DO-P[0]	%QW0	WORD	65535	
Bit0	%QX0.0	BOOL	TRUE	
Bit1	%QX0.1	BOOL	TRUE	
Bit2	%QX0.2	BOOL	TRUE	
Bit3	%QX0.3	BOOL	TRUE	
Bit4	%QX0.4	BOOL	TRUE	
Bit5	%QX0.5	BOOL	TRUE	
Bit6	%QX0.6	BOOL	TRUE	
Bit7	%QX0.7	BOOL	TRUE	

Figure 6-1- 35

6.1.3.5 DF20-M-16DO-P digital output module

- Each channel output can be enabled as shown below.

DF20-M-16DO-P[0]	%QW1	WORD	65535	
Bit0	%QX2.0	BOOL	TRUE	
Bit1	%QX2.1	BOOL	TRUE	
Bit2	%QX2.2	BOOL	TRUE	
Bit3	%QX2.3	BOOL	TRUE	
Bit4	%QX2.4	BOOL	TRUE	
Bit5	%QX2.5	BOOL	TRUE	
Bit6	%QX2.6	BOOL	TRUE	
Bit7	%QX2.7	BOOL	TRUE	
Bit8	%QX3.0	BOOL	TRUE	

Figure 6-1- 36

6.1.3.6 DF20-M-32DO-P digital output module

- Each channel output can be enabled as shown below.

	DF20-M-32DO-P[0]	%QW2	WORD	65535	
	DF20-M-32DO-P[1]	%QW3	WORD	65535	

Figure 6-1- 37

6.1.3.7 DF20-M-8DIO-P digital input/output module

- This module can set the input filter in the web page. The setting method is as shown in the figure below. The default is 3ms.

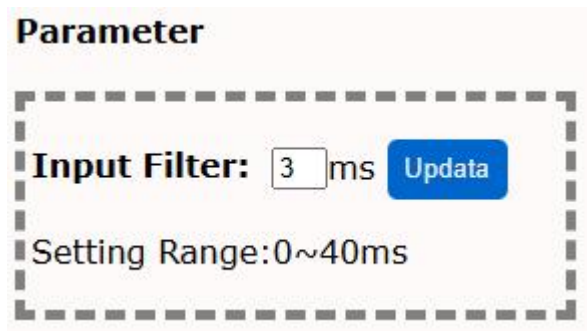


Figure 6-1- 38

- You can view each channel input data as shown below.

		DF20-M-8DIO-P	%IW73	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DIO-P[0]	%IW73	WORD	0	
		DF20-M-8DIO-P	%QW4	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DIO-P[0]	%QW4	WORD	0	

Figure 6-1- 39

- Each channel output can be enabled as shown below.

		DF20-M-8DIO-P	%IW73	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DIO-P[0]	%IW73	WORD	0	
		DF20-M-8DIO-P	%QW4	ARRAY [0..0] OF WORD	Only subelements updated	
		DF20-M-8DIO-P[0]	%QW4	WORD	255	
		Bit0	%QX8.0	BOOL	TRUE	
		Bit1	%QX8.1	BOOL	TRUE	
		Bit2	%QX8.2	BOOL	TRUE	

Figure 6-1- 40

6.1.4 Analog Module Usage Routines

- This routine uses

DF20-C-MD-TCP-V1+DF20-M-4AI-U-0+DF20-M-4AI-U-1+DF20-M-4AI-I-2+DF20-M-4AI-I-3+DF20-M-4AI-U-4+DF20-M-8AI-U-4+DF20-M-4AI-U-5+DF20-M-8AI-I-5

+DF20-M-4AO-U-0+DF20-M-4AO-U-1+DF20-M-4AO-I-2+DF20-M-4AO-I-3+DF20-M-4AO-U-4

The topology of +DF20-M-8AO-U-4+DF20-M-4AO-1-5+DF20-M-8AO-1-5. Add all channels as

shown below.

Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		
DF20-M-4AI-U-0	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0000	4	Keep last value		
DF20-M-4AI-U-1	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0004	4	Keep last value		
DF20-M-4AI-I-2	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0008	4	Keep last value		
DF20-M-4AI-I-3	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#000C	4	Keep last value		
DF20-M-4AI-U-4	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0010	4	Keep last value		
DF20-M-8AI-U-4	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0014	8	Keep last value		
F20-M-4AI-U-5	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#001C	4	Keep last value		
DF20-M-8AI-I-5	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0020	8	Keep last value		
DF20-M-4AO-U-0	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0028	4
DF20-M-4AO-U-1	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#002C	4
DF20-M-4AO-I-2	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0030	4
DF20-M-4AO-I-3	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0034	4
DF20-M-4AO-U-4	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0038	4
DF20-M-8AO-U-4	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#003C	8
F20-M-4AO-U-5	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0044	4
DF20-M-8AO-I-5	Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0048	8

Figure 6-1- 41

6.1.4.1 DF20-M-4AI-U-0 voltage input module

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

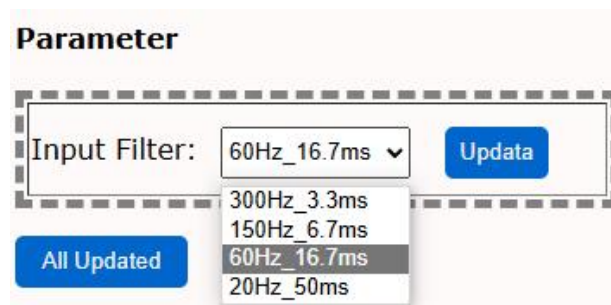


Figure 6-1- 42

- After applying 5V voltage to CH1, the value shown in the figure below is obtained. Through conversion, the collected voltage is 5.001V.

DF20-M-4AI-U-0	%IW69	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AI-U-0[0]	%IW69	WORD	16390
DF20-M-4AI-U-0[1]	%IW70	WORD	65535
DF20-M-4AI-U-0[2]	%IW71	WORD	65533
DF20-M-4AI-U-0[3]	%IW72	WORD	65535

Figure 6-1- 43

6.1.4.2 DF20-M-4AI-U-1 voltage input module

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

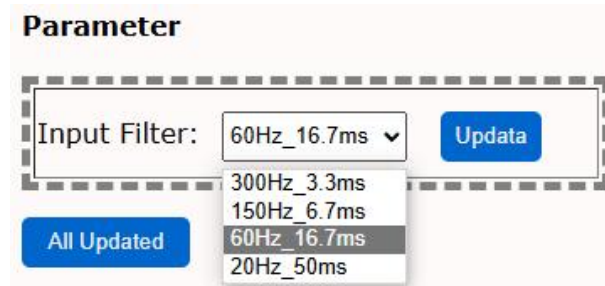


Figure 6-1- 44

- After applying 5V voltage to CH1, the value shown in the figure below is obtained. Through conversion, the collected voltage is 4.998V.

DF20-M-4AI-U-1	%IW73	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AI-U-1[0]	%IW73	WORD	32758
DF20-M-4AI-U-1[1]	%IW74	WORD	3
DF20-M-4AI-U-1[2]	%IW75	WORD	0
DF20-M-4AI-U-1[3]	%IW76	WORD	4

Figure 6-1- 45

6.1.4.3 DF20-M-4AI-I-2 current input module

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

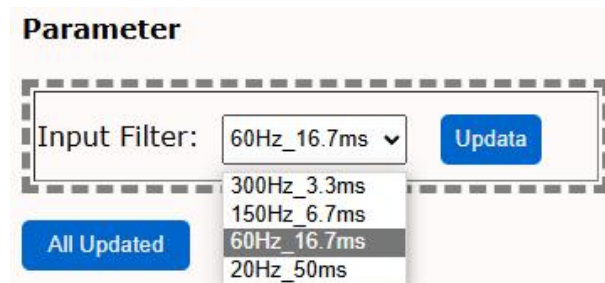


Figure 6-1- 46

- After passing 10ma current to CH1, the value shown in the figure below is obtained. Through conversion, the collected current is 9.986ma.

DF20-M-4AI-I-2	%IW77	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AI-I-2[0]	%IW77	WORD	32724
DF20-M-4AI-I-2[1]	%IW78	WORD	0
DF20-M-4AI-I-2[2]	%IW79	WORD	0
DF20-M-4AI-I-2[3]	%IW80	WORD	0

Figure 6-1- 47

6.1.4.4 DF20-M-4AI-I-3 current input module

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

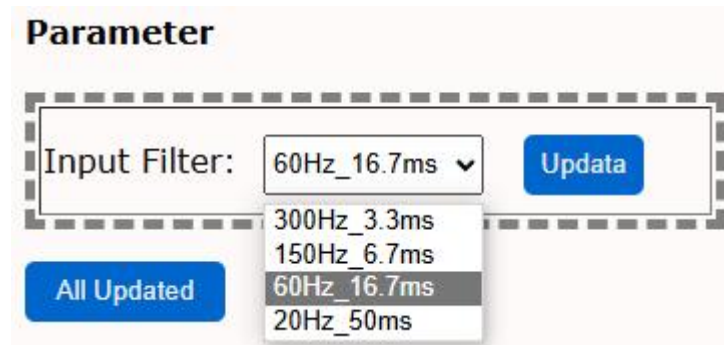


Figure 6-1- 48

- After passing 10ma current to CH1, the value shown in the figure below is obtained. Through conversion, the collected current is 10.005ma.

DF20-M-4AI-I-3	%IW81	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AI-I-3[0]	%IW81	WORD	24599
DF20-M-4AI-I-3[1]	%IW82	WORD	0
DF20-M-4AI-I-3[2]	%IW83	WORD	0
DF20-M-4AI-I-3[3]	%IW84	WORD	0

Figure 6-1- 49

6.1.4.5 DF20-M-4AI-U-4 voltage input module

- As shown in the figure below, you can set the module collection voltage range, the default is -10V~10V (-32768~32767).

Parameter

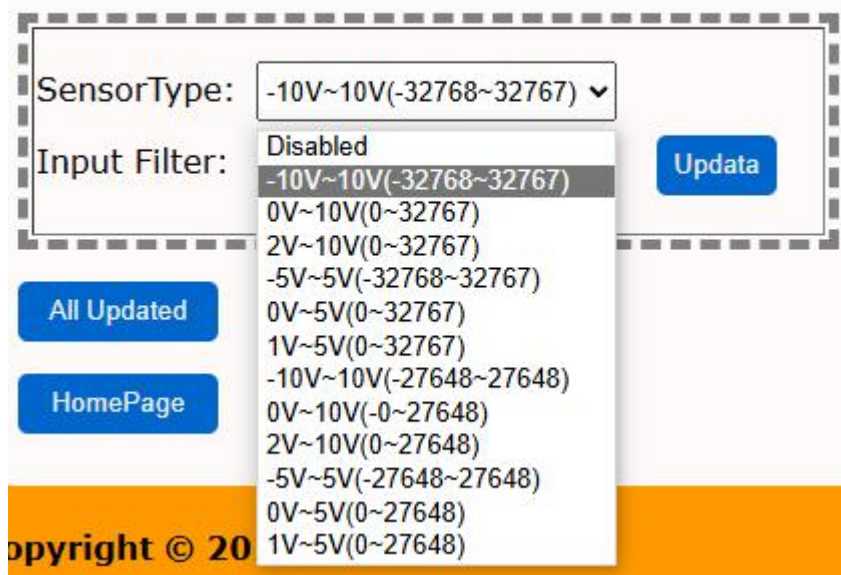


Figure 6-1- 50

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

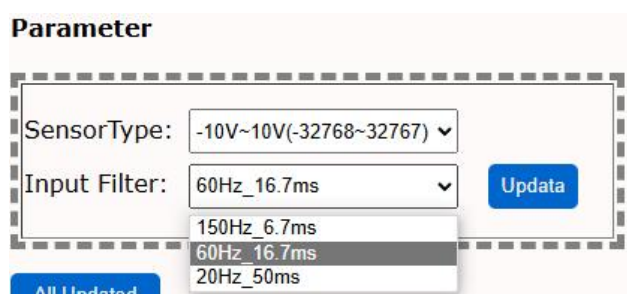


Figure 6-1- 51

- After applying 5V voltage to CH1, the value shown in the figure below is obtained. Through conversion, the collected voltage is 5.000V.

DF20-M-4AI-U-4	%IW85	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AI-U-4[0]	%IW85	WORD	16386
DF20-M-4AI-U-4[1]	%IW86	WORD	65533
DF20-M-4AI-U-4[2]	%IW87	WORD	65533
DF20-M-4AI-U-4[3]	%IW88	WORD	65529

Figure 6-1- 52

6.1.4.6 DF20-M-8AI-U-4 voltage input module

- As shown in the figure below, you can set the module collection voltage range, the default is

-10V~10V (-32768~32767). Set Channel 1

It is 0~10V (0~32767).

Parameter

Channel 1 Input Range: Disabled Input Filter: Disabled Input Filter: -10V~10V(-32768~32767)	Channel 2 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 3 Input Range: -5V~5V(-32768~32767) Input Filter: 1V~5V(0~32767) Input Filter: -10V~10V(-27648~27648)	Channel 4 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 5 Input Range: -5V~5V(-27648~27648) Input Filter: 0V~5V(0~27648) Input Filter: 1V~5V(0~27648)	Channel 6 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 7 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 8 Input Range: Disabled Input Filter: 100Hz_10ms Update

Figure 6-1- 53

- As shown in the figure below, the signal filtering of each channel can be set, the default is 100Hz_10ms.

Parameter

Channel 1 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 2 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 3 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 4 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 5 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 6 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 7 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 8 Input Range: Disabled Input Filter: 100Hz_10ms Update

Figure 6-1- 54

- After applying 5V voltage to CH1, the value shown in the figure below is obtained. Through conversion, the voltage is 5.004V.

DF20-M-8AI-U-4			
DF20-M-8AI-U-4[0]	%IW89	ARRAY [0..7] OF WORD	Only subelements up...
DF20-M-8AI-U-4[1]	%IW89	WORD	16398
DF20-M-8AI-U-4[2]	%IW90	WORD	0
DF20-M-8AI-U-4[3]	%IW91	WORD	0
DF20-M-8AI-U-4[4]	%IW92	WORD	0
DF20-M-8AI-U-4[5]	%IW93	WORD	0
DF20-M-8AI-U-4[6]	%IW94	WORD	0
DF20-M-8AI-U-4[7]	%IW95	WORD	0
LW3108[7]	%IW96	WORD	0

Figure 6-1- 55

6.1.4.7 DF20-M-4AI-I-5 current input module

- As shown in the figure below, you can set the module collection current range, the default is 0~20ma (0~65535).

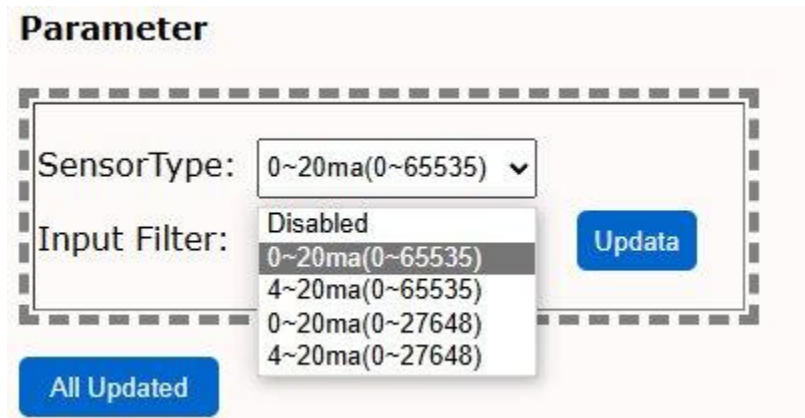


Figure 6-1- 56

- As shown in the figure below, the signal filtering of each channel can be set, the default is 20Hz_50ms.

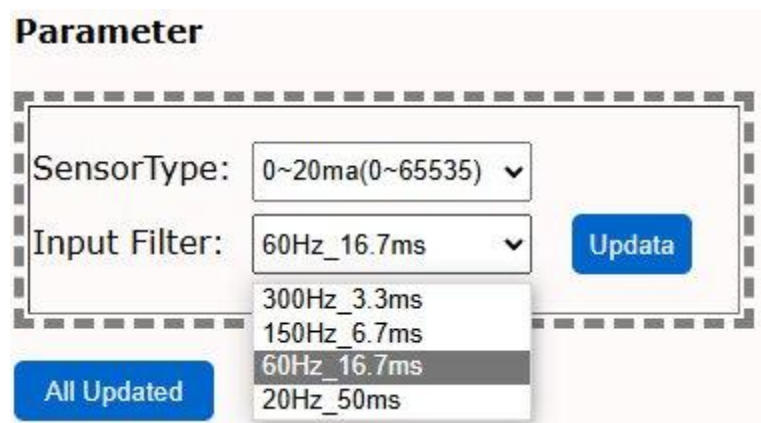


Figure 6-1- 57

- After passing a 10ma current to CH1, the value shown in the figure below is obtained. Through conversion, the collected current is 10.004ma.

F20-M-4AI-I-5	%IW97	ARRAY [0..3] OF WORD	Only subelements up...
F20-M-4AI-I-5[0]	%IW97	WORD	32781
F20-M-4AI-I-5[1]	%IW98	WORD	0
F20-M-4AI-I-5[2]	%IW99	WORD	0
F20-M-4AI-I-5[3]	%IW100	WORD	1

Figure 6-1- 58

6.1.4.8 DF20-M-8AI-I-5 current input module

- As shown in the figure below, you can set the module collection current range, the default is 0~20ma (0~65535).

Parameter

Channel 1 Input Range: Disabled ▾ Input Filter: Disabled ▾ Update 0~20ma(0~65535) 4~20ma(0~65535)	Channel 2 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update
Channel 3 Input Range: 0~20ma(0~27648) ▾ Input Filter: 100Hz_10ms ▾ Update	Channel 4 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update
Channel 5 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update	Channel 6 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update
Channel 7 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update	Channel 8 Input Range: Disabled ▾ Input Filter: 100Hz_10ms ▾ Update

Figure 6-1- 59

- As shown in the figure below, the signal filtering of each channel can be set, the default is 100Hz_10ms.

Parameter

Channel 1 Input Range: 0~20ma(0~65E Input Filter: 100Hz_10ms Update	Channel 2 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 3 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 4 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 5 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 6 Input Range: Disabled Input Filter: 100Hz_10ms Update
Channel 7 Input Range: Disabled Input Filter: 100Hz_10ms Update	Channel 8 Input Range: Disabled Input Filter: 100Hz_10ms Update

Figure 6-1- 60

- After passing a 10ma current to CH1, the value shown in the figure below is obtained. Through conversion, the collected voltage is 10.002ma.

DF20-M-8AO-I-5	%IW 101	ARRAY [0..7] OF WORD	Only subelements up...
DF20-M-8AO-I-5[0]	%IW 101	WORD	32777
DF20-M-8AO-I-5[1]	%IW 102	WORD	4
DF20-M-8AO-I-5[2]	%IW 103	WORD	0
DF20-M-8AO-I-5[3]	%IW 104	WORD	0
DF20-M-8AO-I-5[4]	%IW 105	WORD	4
DF20-M-8AO-I-5[5]	%IW 106	WORD	4
DF20-M-8AO-I-5[6]	%IW 107	WORD	2
DF20-M-8AO-I-5[7]	%IW 108	WORD	2

Figure 6-1- 61

6.1.4.9 DF20-M-4AO-U-0 voltage output module

- As shown in the figure below, write the value "32767" to the CH1 channel of the module. When measured with a multimeter, the output voltage is 10V.

DF20-M-4AO-U-0	%QW4	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AO-U-0[0]	%QW4	WORD	32767
DF20-M-4AO-U-0[1]	%QW5	WORD	0
DF20-M-4AO-U-0[2]	%QW6	WORD	0
DF20-M-4AO-U-0[3]	%QW7	WORD	0

Figure 6-1- 1

6.1.4.10 DF20-M-4AO-U-1 voltage output module

- As shown in the figure below, write the value "32767" to the CH1 channel of the module. When measured with a multimeter, the output voltage is 5V.

DF20-M-4AO-U-1	%QW8	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AO-U-1[0]	%QW8	WORD	32767
DF20-M-4AO-U-1[1]	%QW9	WORD	0
DF20-M-4AO-U-1[2]	%QW10	WORD	0
DF20-M-4AO-U-1[3]	%QW11	WORD	0

Figure 6-1- 2

6.1.4.11 DF20-M-4AO-I-2 current output module

- Write the value "65535" to the module CH1 channel as shown in the figure below. When measured with a multimeter, the output current is 20ma.

DF20-M-4AO-I-2	%QW12	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AO-I-2[0]	%QW12	WORD	65535
DF20-M-4AO-I-2[1]	%QW13	WORD	0
DF20-M-4AO-I-2[2]	%QW14	WORD	0
DF20-M-4AO-I-2[3]	%QW15	WORD	0

Figure 6-1- 3

6.1.4.12 DF20-M-4AO-I-3 current output module

- Write the value "65535" to the module CH1 channel as shown in the figure below. When measured with a multimeter, the output current is 20ma.

DF20-M-4AO-I-3	%QW16	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AO-I-3[0]	%QW16	WORD	65535
DF20-M-4AO-I-3[1]	%QW17	WORD	0
DF20-M-4AO-I-3[2]	%QW18	WORD	0
DF20-M-4AO-I-3[3]	%QW19	WORD	0

Figure 6-1- 4

6.1.4.13 DF20-M-4AO-U-4 voltage output module

- As shown in the figure below, the module output voltage range can be set, the default is -10V~10V (-32768~32767).

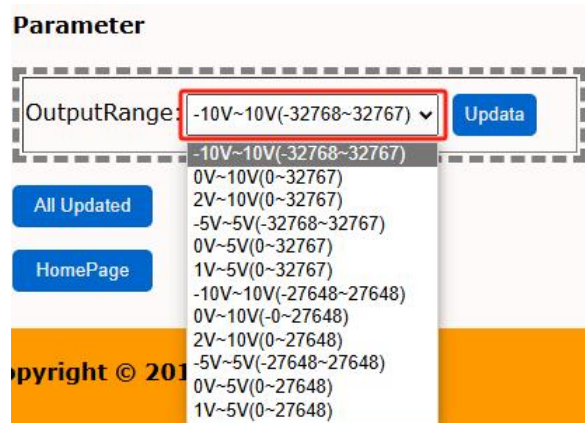


Figure 6-1- 5

- As shown in the figure below, write the value "32767" to the CH1 channel of the module. When measure DF20-M-4AO-U-4 meter, the output voltage is 10V.

DF20-M-4AO-U-4			
DF20-M-4AO-U-4[0]	%QW20	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4AO-U-4[1]	%QW20	WORD	32767
DF20-M-4AO-U-4[2]	%QW21	WORD	0
DF20-M-4AO-U-4[3]	%QW22	WORD	0
LW4104[3]	%QW23	WORD	0

Figure 6-1- 6

6.1.4.14 DF20-M-8AO-U-4 voltage output module

- As shown in the figure below, the module output voltage range can be set, the default is -10V~10V (-32768~32767).

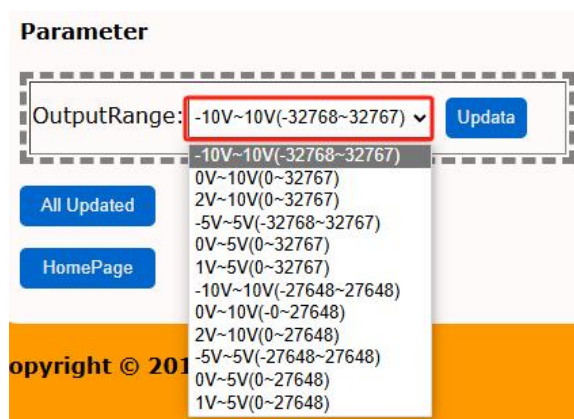


Figure 6-1- 7

- As shown in the figure below, write the value "32767" to the CH1 channel of the module. When measured with a multimeter, the output voltage is 10V.

DF20-M-8AO-U-4	%QW24	ARRAY [0..7] OF WORD	Only subelements up...
DF20-M-8AO-U-4[0]	%QW24	WORD	32767
DF20-M-8AO-U-4[1]	%QW25	WORD	0
DF20-M-8AO-U-4[2]	%QW26	WORD	0
DF20-M-8AO-U-4[3]	%QW27	WORD	0
DF20-M-8AO-U-4[4]	%QW28	WORD	0
DF20-M-8AO-U-4[5]	%QW29	WORD	0
DF20-M-8AO-U-4[6]	%QW30	WORD	0
DF20-M-8AO-U-4[7]	%QW31	WORD	0

Figure 6-1- 8

6.1.4.15 DF20-M-4AO-I-5 current output module

- As shown in the figure below, the module output current range can be set, which is 0~20ma (0~65535) by default.

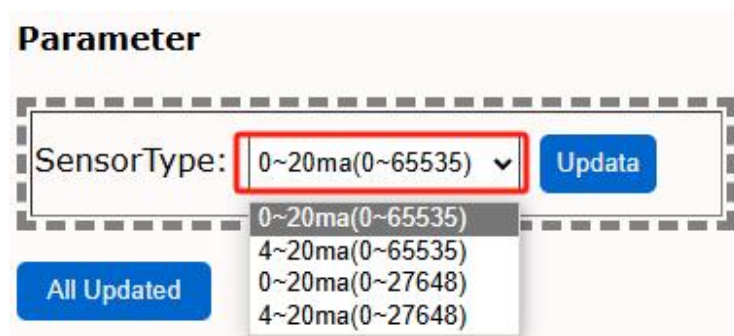


Figure 6-1- 9

- Write the value "65535" to the module CH1 channel as shown in the figure below. When measured with a multimeter, the output current is 20ma.

F20-M-4AO-I-5	%QW32	ARRAY [0..3] OF WORD	Only subelements up...
F20-M-4AO-I-5[0]	%QW32	WORD	65535
F20-M-4AO-I-5[1]	%QW33	WORD	0
F20-M-4AO-I-5[2]	%QW34	WORD	0
F20-M-4AO-I-5[3]	%QW35	WORD	0

Figure 6-1- 10

6.1.4.16 DF20-M-8AO-1-5 current output module

- As shown in the figure below, the module output current range can be set, which is 0~20ma (0~65535) by default.

Parameter

SensorType: 0~20ma(0~65535) ▾ Update

All Updated

0~20ma(0~65535)
4~20ma(0~65535)
0~20ma(0~27648)
4~20ma(0~27648)

Figure 6-1- 11

- Write the value "65535" to the module CH1 channel as shown in the figure below. When measured with a multimeter, the output current is 20ma.

DF20-M-8AO-I-5	%QW36	ARRAY [0..7] OF WORD	Only subelements up...
DF20-M-8AO-I-5[0]	%QW36	WORD	65535
DF20-M-8AO-I-5[1]	%QW37	WORD	0
DF20-M-8AO-I-5[2]	%QW38	WORD	0
DF20-M-8AO-I-5[3]	%QW39	WORD	0
DF20-M-8AO-I-5[4]	%QW40	WORD	0
DF20-M-8AO-I-5[5]	%QW41	WORD	0
DF20-M-8AO-I-5[6]	%QW42	WORD	0
DF20-M-8AO-I-5[7]	%QW43	WORD	0

Figure 6-1- 12

6.1.5 RTD Sensor Data Acquisition Module Usage Routines

- This routine uses DF20-C-MD-TCP-V1+DF20-M-2RTD-PT+DF20-M-4RTD-PT topology to add all channels as shown below.

	Name	Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset
0	Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value	
1	DF20-M-2RTD-PT	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0004	2	Keep last value	
2	DF20-M-4RTD-PT	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0008	4	Keep last value	

Figure 6-1- 62

6.1.5.1 DF20-M-2RTD-PT thermal resistance measurement module

- As shown in the figure below, you can modify the sensor type collected by this module, which is PT100 by default.

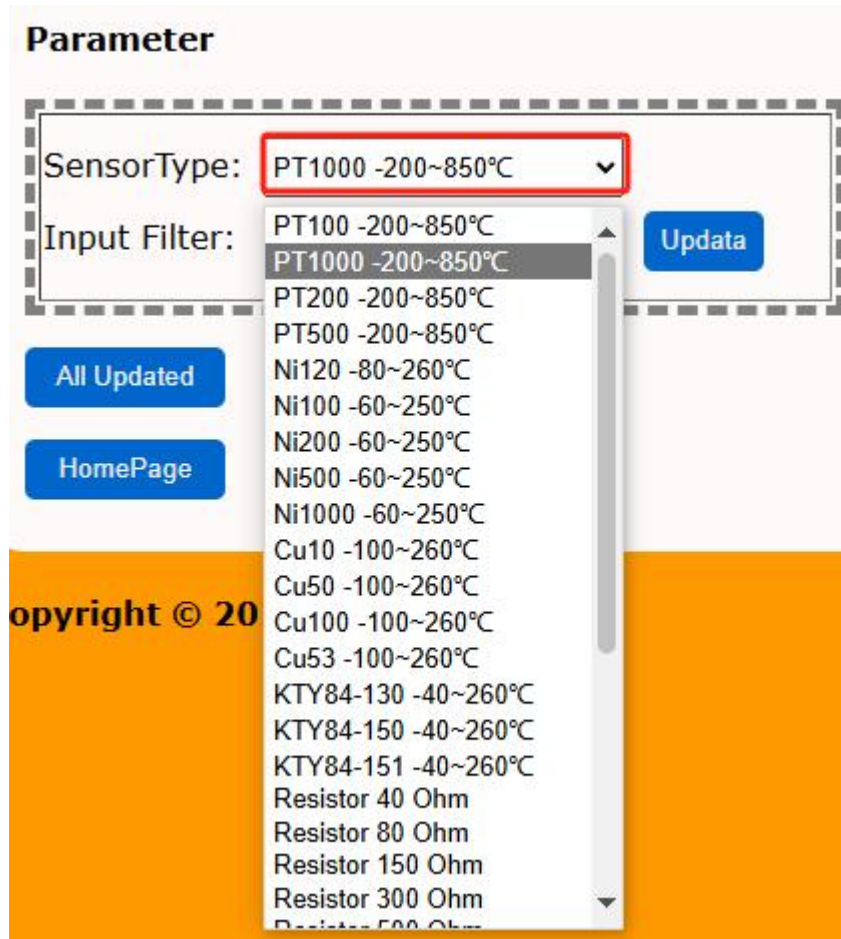


Figure 6-1- 63

- As shown in the figure below, you can adjust the filter settings of this module. The default is 2.5Hz_400ms.

Parameter

SensorType: PT1000 -200~850°C

Input Filter: 7.5Hz_133ms

1.25Hz_800ms
2.5Hz_400ms
5Hz_200ms
7.5Hz_133ms

Update

All Updated

Figure 6-1- 64

- After the sensor is connected to the module CH1, the data shown in the figure below is obtained. "257" means the collected temperature is 25.7 °C.

DF20-M-2RTD-PT	%IW69	ARRAY [0..1] OF WORD	Only subelements up...
DF20-M-2RTD-PT[0]	%IW69	WORD	257
DF20-M-2RTD-PT[1]	%IW70	WORD	32768

Figure 6-1- 65

6.1.5.2 DF20-M-4RTD-PT thermal resistance measurement module

- As shown in the figure below, you can modify the sensor type collected by this module, which is PT100 by default.

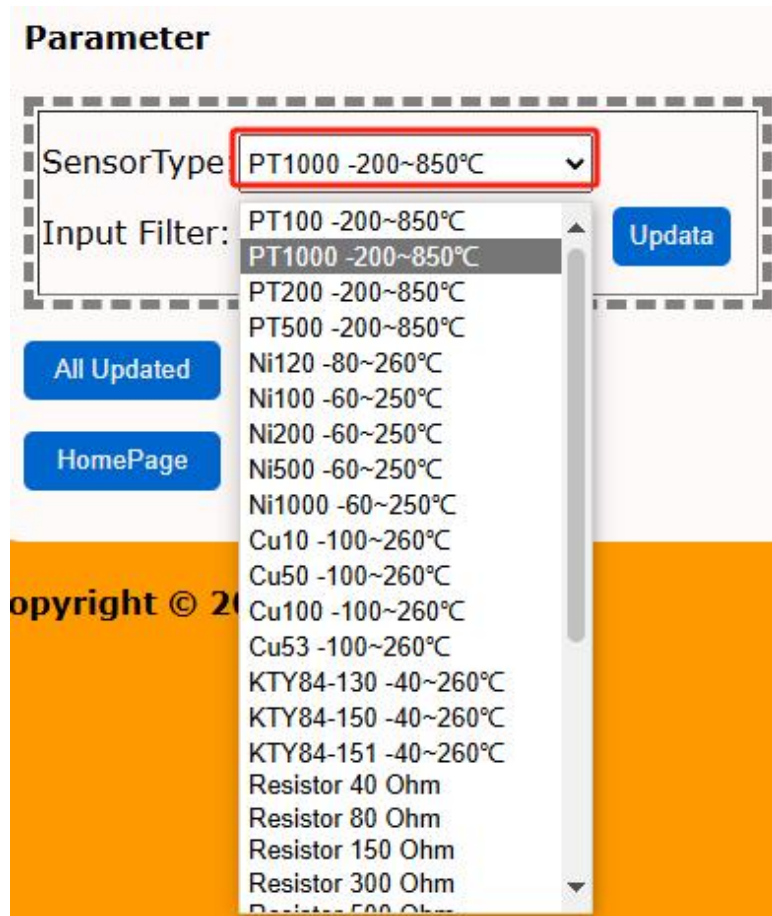


Figure 6-1- 66

- As shown in the figure below, you can adjust the filter settings of this module. The default is 2.5Hz_400ms.

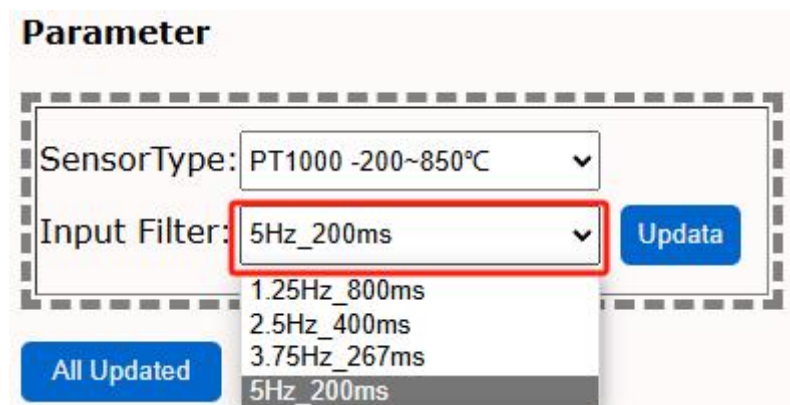


Figure 6-1- 67

- After the sensor is connected to the module CH1, the data shown in the figure below is obtained. "263" means the collected temperature is 26.3 °C.

DF20-M-4RTD-PT	%IW71	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4RTD-PT[0]	%IW71	WORD	263
DF20-M-4RTD-PT[1]	%IW72	WORD	32768
DF20-M-4RTD-PT[2]	%IW73	WORD	32768
DF20-M-4RTD-PT[3]	%IW74	WORD	32768

Figure 6-1- 68

6.1.6 Thermocouple Temperature Data Acquisition Module Usage Routines

- This routine uses DF20-C-MD-TCP-V1+DF20-M-4TC-KETJ+DF20-M-8TC-KETJ topology structure to add all channels as shown in the figure below.

	Name	Access Type	Trigger	READ Offset	Length	Error Handling
0	Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value
1	DF20-M-4TC-KETJ	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0000	4	Keep last value
2	DF20-M-8TC-KETJ	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0004	8	Keep last value

Figure 6-1- 69

6.1.6.1 DF20-M-4TC-KETJ thermocouple measurement module

- As shown in the figure below, the sensor type collected by this module can be modified, and the default is K-type sensor.

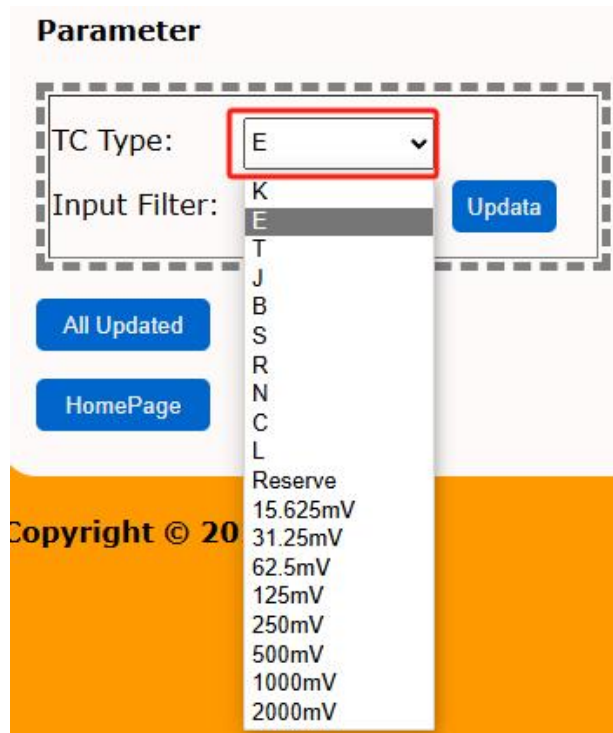


Figure 6-1- 70

- As shown in the figure below, you can adjust the filter settings of this module. The default

setting is 2Hz_500ms.

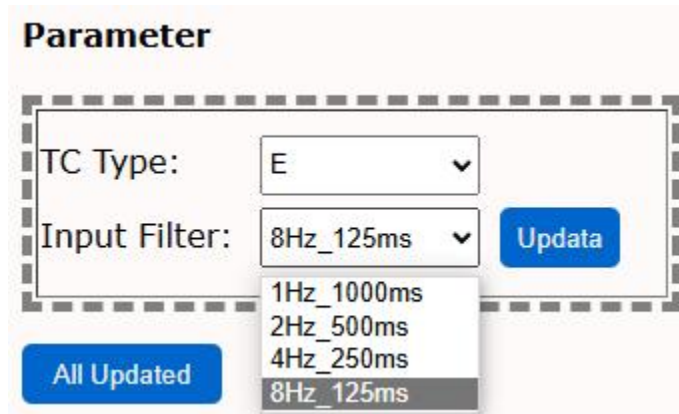


Figure 6-1- 71

- After CH1 is connected to the sensor, as shown in the figure below, "264" means 26.4 °C

DF20-M-4TC-KETJ	%IW69	ARRAY [0..3] OF WORD	Only subelements up...
DF20-M-4TC-KETJ[0]	%IW69	WORD	264
DF20-M-4TC-KETJ[1]	%IW70	WORD	32768
DF20-M-4TC-KETJ[2]	%IW71	WORD	32768
DF20-M-4TC-KETJ[3]	%IW72	WORD	32768

Figure 6-1- 72

6.1.6.2 DF20-M-8TC-KETJ thermocouple measurement module

- As shown in the figure below, the sensor type collected by this module can be modified, and the default is K sensor.

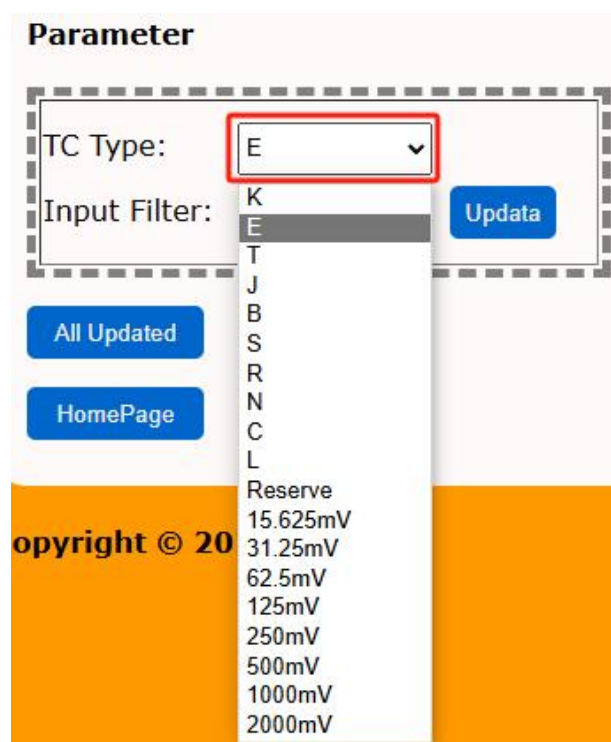


Figure 6-1- 73

- As shown in the figure below, you can adjust the filter settings of this module. The default is 1800ms.

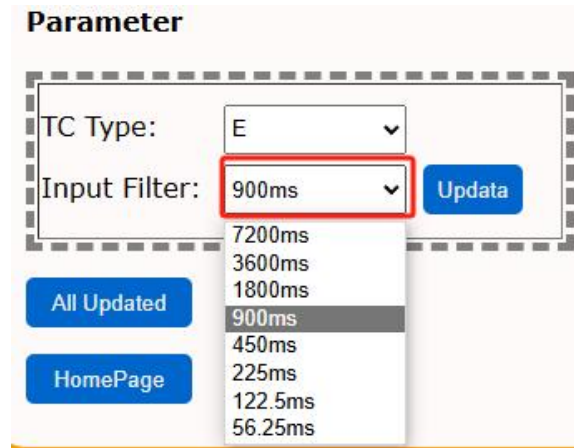


Figure 6-1- 74

- After CH1 is connected to the sensor, as shown in the figure below, "262" means 26.2 °C

DF20-M-8TC-KETJ	%IW73	ARRAY [0..7] OF WORD	Only subelements up...
DF20-M-8TC-KETJ[0]	%IW73	WORD	262
DF20-M-8TC-KETJ[1]	%IW74	WORD	32768
DF20-M-8TC-KETJ[2]	%IW75	WORD	32768
DF20-M-8TC-KETJ[3]	%IW76	WORD	32768
DF20-M-8TC-KETJ[4]	%IW77	WORD	32768
DF20-M-8TC-KETJ[5]	%IW78	WORD	32768
DF20-M-8TC-KETJ[6]	%IW79	WORD	32768
DF20-M-8TC-KETJ[7]	%IW80	WORD	32768

Figure 6-1- 75

6.1.7 Pressure Transducer Acquisition Module Usage Routine

This routine uses the DF20-C-MD-TCP-V1+DF20-M-2LC-S-5 topology to add all channels as shown in the figure below.

	Name	Access Type	Trigger	READ Offset	Length	Error Handling
0	Sys_DiagInfo	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value
1	DF20-M-2LC-S-5	Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#0000	2	Keep last value

Figure 6-1- 76

6.1.7.1 DF20-M-2LC - S-5 pressure sensor module

- As shown in the figure below, you can adjust the filter settings of this module. The default

setting is 20Hz_50ms.

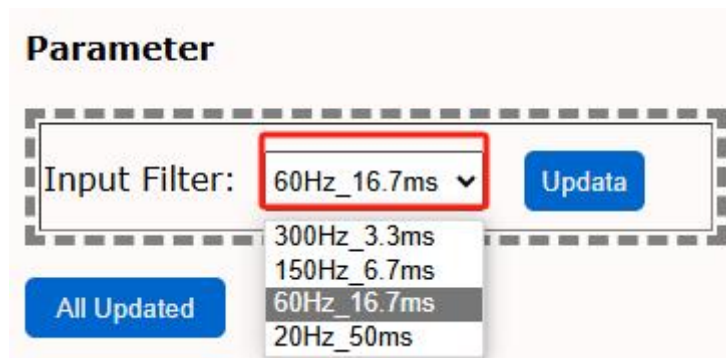


Figure 6-1- 77

- After CH1 is connected to the sensor, as shown in the figure below, the measured value is 4.1kg through conversion. Please refer to [Subsection 3.33](#).

DF20-M-2LC-S-5	%IW69	ARRAY [0..1] OF WORD	Only subelements up...
DF20-M-2LC-S-5[0]	%IW69	WORD	26925

Figure 6-1- 78

6.1.8 Relay Module Usage Routines

- This routine uses the DF20-C-MD-TCP-V1+DF20-M-4DO-R topology to add all channels as shown in the figure below.

Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		
Write Multiple Registers (Function Code 16)	Cyclic, t#100ms				16#0000	1

Figure 6-1- 79

6.1.8.1 DF20-M-4DO-R relay module

- Each channel relay can be closed as shown below.

%QW0	ARRAY [0..0] OF WORD	Only subelements up...	
%QW0	WORD	16#000F	
%QX0.0	BOOL	TRUE	TRUE
%QX0.1	BOOL	TRUE	TRUE
%QX0.2	BOOL	TRUE	TRUE
%QX0.3	BOOL	TRUE	TRUE

Figure 6-1- 80

6.1.9 Encoder Data Acquisition Module Usage Routines

- This routine uses DF20-C-MD-TCP-V1+DF20-M-1CNT-EL-5+DF20-M-1CNT-EL-4+DF20-M-2CNT-PIL-5+DF20-M-2CNT-PIL-4 topology, and adds all channels as shown in the following figure.

Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0001	5	Keep last value	16#0000	1
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0007	5	Keep last value	16#0006	1
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0012	10	Keep last value	16#000C	6
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0022	10	Keep last value	16#001C	6

Figure 6-1- 81

- If DF20-C-MD-TCP-V1+DF20-M-2CNT-EL-5+DF20-M-2CNT-EL-4 topology is used, add channels as shown below.

Access Type	Trigger	READ Offset	Length	Error Handling	WRITE Offset	Length
Read Holding Registers (Function Code 03)	Cyclic, t#100ms	16#07D0	69	Keep last value		
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0006	10	Keep last value	16#0000	6
Read/Write Multiple Registers (Function Code 23)	Cyclic, t#100ms	16#0016	10	Keep last value	16#0010	6

6.1.9.1 DF20-M-1CNT-EL-5 encoder input module

- For module wiring diagrams, refer to [subsection 3.38.2](#). For a description of the module state machine refer to [subsection 3.38.3](#).
- **Enable input:** as shown in the figure below, input 16 # 012B in the control word to enable the encoder input function.

%IW69	ARRAY [0..4] OF WORD	Only subelements up...	
%IW69	WORD	16#010B	
%IW70	WORD	16#0BE2	
%IW71	WORD	16#0000	count
%IW72	WORD	16#0000	
%IW73	WORD	16#0000	
%QW0	ARRAY [0..0] OF WORD	Only subelements up...	
%QW0	WORD	16#012B	16#012B

Figure 6-1- 82

- **Electronic probe:** Input 24V and 0V voltage respectively to channel 1 and channel 2 of DF20-M-1CNT-EL-5 to enable electronic probe latch value, as shown in the figure below.

%IW69	ARRAY [0..4] OF WORD	Only subelements up...	
%IW69	WORD	16#010B	
%IW70	WORD	16#0BE2	
%IW71	WORD	16#0000	
%IW72	WORD	16#0BE2	
%IW73	WORD	16#0000	
%QW0	ARRAY [0..0] OF WORD	Only subelements up...	
%QW0	WORD	16#012B	16#012B

Figure 6-1- 83

- **Clear count:** input 16 # 012C in the control word to clear the count value and the electronic probe latch value, and disable the encoder to input power

Can. As shown in the figure below.

%IW69	ARRAY [0..4] OF WORD	Only subelements up...	
%IW69	WORD	16#010C	
%IW70	WORD	16#0000	
%IW71	WORD	16#0000	
%IW72	WORD	16#0000	
%IW73	WORD	16#0000	
%QW0	ARRAY [0..0] OF WORD	Only subelements up...	
%QW0	WORD	16#012C	16#012C

Figure 6-1- 84

6.1.9.2 DF20-M-1CNT-EL-4 encoder input module

- For module wiring diagrams, refer to [subsection 3.39.2](#). For a description of the module state machine refer to [subsection 3.39.3](#).
- **Enable input:** as shown in the figure below, input 16 # 012B in the control word to enable the encoder input function.

%IW74	ARRAY [0..4] OF WORD	Only subelements up...	
%IW74	WORD	16#010B	
%IW75	WORD	16#2132	count
%IW76	WORD	16#0000	
%IW77	WORD	16#0000	
%IW78	WORD	16#0000	
%QW1	ARRAY [0..0] OF WORD	Only subelements up...	
%QW1	WORD	16#012B	16#012B

Figure 6-1- 85

- **Electronic probe:** Input 24V and 0V voltage respectively to channel 1 and channel 2 of DF20-M-1CNT-EL-4 to enable electronic probe latch value, as shown below

Shown.

%IW74	ARRAY [0..4] OF WORD	Only subelements up...	
%IW74	WORD	16#010B	
%IW75	WORD	16#2132	
%IW76	WORD	16#0000	
%IW77	WORD	16#2132	
%IW78	WORD	16#0000	
%QW1	ARRAY [0..0] OF WORD	Only subelements up...	
%QW1	WORD	16#012B	16#012B

Figure 6-1- 86

- **Clear count:** input 16 # 012C in the control word to clear the count value and the electronic probe latch value, and disable the encoder to input power

Can. As shown in the figure below.

%IW74	ARRAY [0..4] OF WORD	Only subelements up...	
%IW74	WORD	16#010C	
%IW75	WORD	16#0000	
%IW76	WORD	16#0000	
%IW77	WORD	16#0000	
%IW78	WORD	16#0000	
%QW1	ARRAY [0..0] OF WORD	Only subelements up...	
%QW1	WORD	16#012C	16#012C

Figure 6-1- 87

6.1.9.3 DF20-M-2CNT-PIL-5 encoder input module

➤ The Module Holding Register block data structure is defined as follows.

Table 6.1 2

HoldReg	Byte	Format	Bit	Description
0	QB0	Word	QX0.0	CNT Ctl Ch0
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
1	QB2	Word	Comp Value[16..31] Ch0	
	QB3			
2	QB4	Word	Comp Value[0..15] Ch0	
	QB5			
3	QB6	Word	QX0.0	CNT Ctl Ch1
			QX0.1	
			QX0.2	
			QX0.3	Reserve 0x00
			QX0.4	
			QX0.5	
			QX0.6	
			QX0.7	
	QX1.0			
	QX1.1			
	QX1.2			
	QX1.3			
	QX1.4			
	QX1.5			
	QX1.6			
	QX1.7			
4	QB8	Word	Comp Value[16..31] Ch1	
	QB9			
5	QB10	Word	Comp Value[0..15] Ch1	
	QB11			
6	IB0	Word	IX0.0	CNT State Ch0
			IX0.1	Clear Signal Ch0
			IX0.2	Comp Flag Ch0

DF20-M-2CNT-PIL-5_HoldRegBlock
Size:16

	IB1		IX0.3	Reserve 0x00				
			IX0.4					
			IX0.5					
			IX0.6					
			IX0.7					
			IX1.0					
			IX1.1					
			IX1.2					
			IX1.3					
			IX1.4					
			IX1.5					
			IX1.6					
			IX1.7					
			7		IB2	Word	CNT Value[16..31] Ch0	
IB3								
8	IB4	Word	CNT Value[0..15] Ch0					
	IB5							
9	IB6	Word	Latch Value[16..31] Ch0					
	IB7							
10	IB8	Word	Latch Value[0..15] Ch0					
	IB9							
11	IB10	Word	IX0.0	CNT State Ch1				
			IX0.1	Clear Signal Ch1				
			IX0.2	Comp Flag Ch1				
			IX0.3	Reserve 0x00				
			IX0.4					
			IX0.5					
			IX0.6					
			IX0.7					
	IX1.0							
	IX1.1							
	IX1.2							
	IB11		IX1.3					
			IX1.4					
			IX1.5					
			IX1.6					
			IX1.7					
			12		IB12	Word	CNT Value[16..31] Ch1	
					IB13			
13		IB14	Word	CNT Value[0..15] Ch1				
	IB15							
14	IB16	Word	Latch Value[16..31] Ch1					
	IB17							
15	IB18	Word	Latch Value[0..15] Ch1					
	IB19							

➤ CNT Ctl Description:

Table 6.1 3

Name	Meaning	Address	Description
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1:Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1:Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated. 1:Enable channel 1 compare value
CNT Ctl Ch1	second channel control word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1:Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1:Enable channel 2 compare value

Enable input: as shown in the figure, write 1 enable the first channel pulse input function in the CH1 control word. Write 0 to clear the count.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...	
%IW79	WORD	1	
%IW80	WORD	821	
%IW81	WORD	0	
%IW82	WORD	0	
%IW83	WORD	0	
%IW84	WORD	0	
%IW85	WORD	0	
%IW86	WORD	0	
%IW87	WORD	0	
%IW88	WORD	0	
%QW2	ARRAY [0..5] OF WORD	Only subelements up...	
%QW2	WORD	1	1
%QW3	WORD	0	
%QW4	WORD	0	
%QW5	WORD	0	
%QW6	WORD	0	
%QW7	WORD	0	

Figure 6-1- 88

- As shown in the figure below, writing 1 in the CH2 control word enables the second channel pulse input function. Write 0 to clear the count.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...	
%IW79	WORD	0	
%IW80	WORD	0	
%IW81	WORD	0	
%IW82	WORD	0	
%IW83	WORD	0	
%IW84	WORD	1	
%IW85	WORD	2157	
%IW86	WORD	0	
%IW87	WORD	0	
%IW88	WORD	0	
%QW2	ARRAY [0..5] OF WORD	Only subelements up...	
%QW2	WORD	0	
%QW3	WORD	0	
%QW4	WORD	0	
%QW5	WORD	1	1
%QW6	WORD	0	
%QW7	WORD	0	

CH2
count

Figure 6-1- 89

- **Electronic probe:** Take the first channel as an example, write 0 to the second bit in the CH1 control word (QX4.1 in this tutorial). Respectively in mold

The electronic probe latched value can be enabled by inputting 24V and 0V voltage to the two terminals of block 1 and block 2, as shown in the following figure.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...	
%IW79	WORD	3	
%IW80	WORD	2954	
%IW81	WORD	0	
%IW82	WORD	2954	
%IW83	WORD	0	
%IW84	WORD	0	
%IW85	WORD	0	
%IW86	WORD	0	
%IW87	WORD	0	
%IW88	WORD	0	
%QW2	ARRAY [0..5] OF WORD	Only subelements up...	
%QW2	WORD	1	
%QX4.0	BOOL	TRUE	
%QX4.1	BOOL	FALSE	FALSE
%QX4.2	BOOL	FALSE	

comp

Figure 6-1- 90

- **External signal trigger clear count:** take the first channel as an example, write 1 to the second bit in the control word (QX4.1 in this tutorial).

The current count value can be cleared by inputting 24V and 0V voltage to the two terminals of module 1 and module 2 respectively, as shown in the following figure.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	836
%IW81	WORD	0
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW2	ARRAY [0..5] OF WORD	Only subelements up...
%QW2	WORD	3
%QX4.0	BOOL	TRUE
%QX4.1	BOOL	TRUE
%QX4.2	BOOL	FALSE

Figure 6-1- 91No external signal has been triggered

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	3
%IW80	WORD	0
%IW81	WORD	0
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW2	ARRAY [0..5] OF WORD	Only subelements up...
%QW2	WORD	3
%QX4.0	BOOL	TRUE
%QX4.1	BOOL	TRUE
%QX4.2	BOOL	FALSE

Figure 6-1- 92triggering an external signal

- **Comparison value function:** take the first channel as an example, as shown in the figure below, enter 1 in the third position of the control word (QX4.2 in this tutorial), and enter Comp

Write 10000 in Value [16..31] Ch1.

%QW2	ARRAY [0..5] OF WORD	Only subelements up...	
%QW2	WORD	5	
%QX4.0	BOOL	TRUE	
%QX4.1	BOOL	FALSE	
%QX4.2	BOOL	TRUE	
%QX4.3	BOOL	FALSE	
%QX4.4	BOOL	FALSE	
%QX4.5	BOOL	FALSE	
%QX4.6	BOOL	FALSE	
%QX4.7	BOOL	FALSE	
%QX5.0	BOOL	FALSE	
%QX5.1	BOOL	FALSE	
%QX5.2	BOOL	FALSE	
%QX5.3	BOOL	FALSE	
%QX5.4	BOOL	FALSE	
%QX5.5	BOOL	FALSE	
%QX5.6	BOOL	FALSE	
%QX5.7	BOOL	FALSE	
%QW3	WORD	10000	10000
%QW4	WORD	0	
%QW5	WORD	0	
%QW6	WORD	0	
%QW7	WORD	0	

Figure 6-1- 93

- As shown in the figure, the current count value is 3293, which is lower than the comparison value of 10000. The Comp Flag Ch1 (IX158.2) bit in the status word is displayed as 0.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IX158.0	BOOL	TRUE
%IX158.1	BOOL	FALSE
%IX158.2	BOOL	FALSE
%IX158.3	BOOL	FALSE
%IX158.4	BOOL	FALSE
%IX158.5	BOOL	FALSE
%IX158.6	BOOL	FALSE
%IX158.7	BOOL	FALSE
%IX159.0	BOOL	FALSE
%IX159.1	BOOL	FALSE
%IX159.2	BOOL	FALSE
%IX159.3	BOOL	FALSE
%IX159.4	BOOL	FALSE
%IX159.5	BOOL	FALSE
%IX159.6	BOOL	FALSE
%IX159.7	BOOL	FALSE
%IW80	WORD	3293
%IW81	WORD	0

Figure 6-1- 94

- As shown in the figure below, the current count value is 10978, which is higher than the comparison value of 10000. The Comp Flag Ch1 (IX158.2) bit in the status word is displayed as 1.

%IW79	ARRAY [0..9] OF WORD	Only subelemen
%IW79	WORD	5
%IX158.0	BOOL	TRUE
%IX158.1	BOOL	FALSE
%IX158.2	BOOL	TRUE
%IX158.3	BOOL	FALSE
%IX158.4	BOOL	FALSE
%IX158.5	BOOL	FALSE
%IX158.6	BOOL	FALSE
%IX158.7	BOOL	FALSE
%IX159.0	BOOL	FALSE
%IX159.1	BOOL	FALSE
%IX159.2	BOOL	FALSE
%IX159.3	BOOL	FALSE
%IX159.4	BOOL	FALSE
%IX159.5	BOOL	FALSE
%IX159.6	BOOL	FALSE
%IX159.7	BOOL	FALSE
%IW80	WORD	10978
%IW81	WORD	0

Figure 6-1- 95

6.1.9.4 DF20-M-2CNT-PIL-4 encoder input module

➤ The Module Holding Register block data structure is defined as follows.

Table 6.1 4

HoldReg	Byte	Format	Bit	Description	
0	QB0	Word	QX0.0	CNT Ctl Ch0	
			QX0.1		
			QX0.2		
			QX0.3	Reserve 0x00	
			QX0.4		
			QX0.5		
			QX0.6		
			QX0.7		
	QX1.0				
	QX1.1				
	QX1.2				
	QX1.3				
	QX1.4				
	QX1.5				
	QX1.6				
	QX1.7				
QB1					
	1	QB2	Word	Comp Value[16..31] Ch0	
		QB3			
	2	QB4	Word	Comp Value[0..15] Ch0	
		QB5			
	3	QB6	Word	QX0.0	CNT Ctl Ch1
				QX0.1	
				QX0.2	
QX0.3				Reserve 0x00	
QX0.4					
QX0.5					
QX0.6					
QX0.7					
QX1.0					
QX1.1					
QX1.2					
QX1.3					
QX1.4					
QX1.5					
QX1.6					
QX1.7					
QB7					
	4	QB8	Word	Comp Value[16..31] Ch1	
		QB9			
	5	QB10	Word	Comp Value[0..15] Ch1	
		QB11			
	6	IB0	Word	IX0.0	CNT State Ch0

DF20-M-2CNT-PIL-4_HoldRegBlock
Size:16

DF20-M-2CNT-PIL-4_HoldRegBlock
Size:16

			IX0.1	Clear Signal Ch0	
			IX0.2	Comp Flag Ch0	
			IX0.3	Reserve 0x00	
			IX0.4		
			IX0.5		
			IX0.6		
			IX0.7		
	IX1.0				
	IX1.1				
	IX1.2				
	IX1.3				
	IX1.4				
	IX1.5				
	IX1.6				
	IX1.7				
7	IB2	Word	CNT Value[16..31] Ch0		
	IB3				
8	IB4	Word	CNT Value[0..15] Ch0		
	IB5				
9	IB6	Word	Latch Value[16..31] Ch0		
	IB7				
10	IB8	Word	Latch Value[0..15] Ch0		
	IB9				
11	IB10	Word	IX0.0	CNT State Ch1	
			IX0.1	Clear Signal Ch1	
			IX0.2	Comp Flag Ch1	
			IX0.3	Reserve 0x00	
			IX0.4		
			IX0.5		
			IX0.6		
	IX0.7				
	IX1.0				
	IX1.1				
	IX1.2				
	IX1.3				
	IX1.4				
	IX1.5				
	IX1.6				
IX1.7					
12	IB12	Word	CNT Value[16..31] Ch1		
	IB13				
13	IB14	Word	CNT Value[0..15] Ch1		
	IB15				
14	IB16	Word	Latch Value[16..31] Ch1		
	IB17				
15	IB18	Word	Latch Value[0..15] Ch1		
	IB19				

➤ CNT Ctl Description:

Table 6.1 5

Name	Meaning		Description
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1:Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1:Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated. 1:Enable channel 1 compare value
CNT Ctl Ch1	second channel control word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1:Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1:Enable channel 2 compare value

- **Enable input:** as shown in the figure below, writing 1 in the CH1 control word can enable the pulse input function of the first channel. Clear when writing 0

Count.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...	
%IW89	WORD	1	
%IW90	WORD	1159	CH1 count
%IW91	WORD	0	
%IW92	WORD	0	
%IW93	WORD	0	
%IW94	WORD	0	
%IW95	WORD	0	
%IW96	WORD	0	
%IW97	WORD	0	
%IW98	WORD	0	
%QW8	ARRAY [0..5] OF WORD	Only subelements up...	
%QW8	WORD	1	1
%QW9	WORD	0	
%QW10	WORD	0	
%QW11	WORD	0	
%QW12	WORD	0	
%QW13	WORD	0	

Figure 6-1- 96

- As shown in the figure below, writing 1 in the CH2 control word enables the second channel pulse input function. Write 0 to clear the count.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...	
%IW89	WORD	0	
%IW90	WORD	0	
%IW91	WORD	0	
%IW92	WORD	0	
%IW93	WORD	0	
%IW94	WORD	1	
%IW95	WORD	1448	
%IW96	WORD	0	
%IW97	WORD	0	
%IW98	WORD	0	
%QW8	ARRAY [0..5] OF WORD	Only subelements up...	
%QW8	WORD	0	
%QW9	WORD	0	
%QW10	WORD	0	
%QW11	WORD	1	1
%QW12	WORD	0	
%QW13	WORD	0	

CH2
count

Figure 6-1- 97

- **Electronic probe:** Take the first channel as an example, write 0 to the second bit in the CH1 control word (QX16.1 in this tutorial). Respectively in

The electronic probe latch value can be enabled by inputting 24V and 0V voltage to the two terminals of module 1 and 2, as shown in the following figure.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...	
%IW89	WORD	3	
%IW90	WORD	974	
%IW91	WORD	0	
%IW92	WORD	974	comp
%IW93	WORD	0	
%IW94	WORD	0	
%IW95	WORD	0	
%IW96	WORD	0	
%IW97	WORD	0	
%IW98	WORD	0	
%QW8	ARRAY [0..5] OF WORD	Only subelements up...	
%QW8	WORD	1	
%QX16.0	BOOL	TRUE	
%QX16.1	BOOL	FALSE	FALSE
%QX16.2	BOOL	FALSE	

Figure 6-1- 98

- **External signal trigger clear count:** take the first channel as an example, write 1 to the second bit in the control word (QX16.1 in this tutorial).

The current count value can be cleared by inputting 24V and 0V voltage to the two terminals of module 1 and module 2 respectively, as shown in the following figure.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...	
%IW89	WORD	1	
%IW90	WORD	974	
%IW91	WORD	0	
%IW92	WORD	0	
%IW93	WORD	0	
%IW94	WORD	0	
%IW95	WORD	0	
%IW96	WORD	0	
%IW97	WORD	0	
%IW98	WORD	0	
%QW8	ARRAY [0..5] OF WORD	Only subelements up...	
%QW8	WORD	3	
%QX16.0	BOOL	TRUE	
%QX16.1	BOOL	TRUE	TRUE
%QX16.2	BOOL	FALSE	

Figure 6-1- 99No external signal has been triggered

%IW89	ARRAY [0..9] OF WORD	Only subelements up...
%IW89	WORD	3
%IW90	WORD	0
%IW91	WORD	0
%IW92	WORD	0
%IW93	WORD	0
%IW94	WORD	0
%IW95	WORD	0
%IW96	WORD	0
%IW97	WORD	0
%IW98	WORD	0
%QW8	ARRAY [0..5] OF WORD	Only subelements up...
%QW8	WORD	3
%QX16.0	BOOL	TRUE
%QX16.1	BOOL	TRUE
%QX16.2	BOOL	FALSE

Figure 6-1- 100triggering an external signal

- **Comparison value function:** take the first channel as an example, as shown in the figure below, enter 1 in the third bit of the control word (QX16.2 in this tutorial), and enter Comp

Write 10000 in Value [16..31] Ch1.

%QW8	ARRAY [0..5] OF WORD	Only subelements up...	
%QW8	WORD	5	
%QX16.0	BOOL	TRUE	
%QX16.1	BOOL	FALSE	
%QX16.2	BOOL	TRUE	
%QX16.3	BOOL	FALSE	
%QX16.4	BOOL	FALSE	
%QX16.5	BOOL	FALSE	
%QX16.6	BOOL	FALSE	
%QX16.7	BOOL	FALSE	
%QX17.0	BOOL	FALSE	
%QX17.1	BOOL	FALSE	
%QX17.2	BOOL	FALSE	
%QX17.3	BOOL	FALSE	
%QX17.4	BOOL	FALSE	
%QX17.5	BOOL	FALSE	
%QX17.6	BOOL	FALSE	
%QX17.7	BOOL	FALSE	
%QW9	WORD	10000	10000
%QW10	WORD	0	
%QW11	WORD	0	

Figure 6-1- 101

- As shown in the figure below, the current count value is 3476, which is lower than the comparison value of 10000. The Comp Flag Ch1 (IX178.2) bit in the status word is 0.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...
%IW89	WORD	1
%IX178.0	BOOL	TRUE
%IX178.1	BOOL	FALSE
%IX178.2	BOOL	FALSE
%IX178.3	BOOL	FALSE
%IX178.4	BOOL	FALSE
%IX178.5	BOOL	FALSE
%IX178.6	BOOL	FALSE
%IX178.7	BOOL	FALSE
%IX179.0	BOOL	FALSE
%IX179.1	BOOL	FALSE
%IX179.2	BOOL	FALSE
%IX179.3	BOOL	FALSE
%IX179.4	BOOL	FALSE
%IX179.5	BOOL	FALSE
%IX179.6	BOOL	FALSE
%IX179.7	BOOL	FALSE
%IW90	WORD	3476
%IW91	WORD	0

Figure 6-1- 102

- As shown in the figure below, the current count value is 11013, which is higher than the comparison value of 10000. The Comp Flag Ch1 (IX178.2) bit in the status word is 1.

%IW89	ARRAY [0..9] OF WORD	Only subelements up...
%IW89	WORD	5
%IX178.0	BOOL	TRUE
%IX178.1	BOOL	FALSE
%IX178.2	BOOL	TRUE
%IX178.3	BOOL	FALSE
%IX178.4	BOOL	FALSE
%IX178.5	BOOL	FALSE
%IX178.6	BOOL	FALSE
%IX178.7	BOOL	FALSE
%IX179.0	BOOL	FALSE
%IX179.1	BOOL	FALSE
%IX179.2	BOOL	FALSE
%IX179.3	BOOL	FALSE
%IX179.4	BOOL	FALSE
%IX179.5	BOOL	FALSE
%IX179.6	BOOL	FALSE
%IX179.7	BOOL	FALSE
%IW90	WORD	11013
%IW91	WORD	0

Figure 6-1- 103

6.1.9.5 DF20-M-2CNT-EL-5 encoder input module

- This module is a 2-channel encoder input module, this routine takes the first channel as an example, and the second channel is used in the same way as the first channel.
- The module parameters can be configured in the web page as shown below.

Parameter

Channel 1
Input Range: Pulse and Directions
Input Filter: 100KHz
CountMode: Line Counter
Direction: Positive Logic
Upper Limit: 2147483647
Lower Limit: -2147483648
Update

Channel 2
Input Range: Rotary transducer quadrup
Input Filter: 100KHz
CountMode: Line Counter
Direction: Positive Logic
Upper Limit: 2147483647
Lower Limit: -2147483648
Update

Figure 6-1- 104

- The module process data description is shown below.

Table 6.1 6

Name	Meaning	Outputting process	Description
------	---------	--------------------	-------------

		data	
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1: Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1: Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated. 1: Enable channel 1 compare value
Comp Value[16..31] Ch0	Channel 1 count value 16 bits high [QB3 QB2]	Low byte storage: QB2	Bit16~bit23
		High byte storage: QB3	Bit24~bit31
Comp Value[0..15] Ch0	Channel 1 count value is 16 bits lower [QB5 QB4]	Low byte storage: QB4	bit0~bit7
		High byte storage: QB5	bit8~bit15
CNT Ctl Ch1	second channel control word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1: Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1: Enable channel 2 compare value
Comp Value[16..31] Ch1	Channel 2 count value 16 bits high [QB9 QB8]	Low byte storage: QB8	Bit16~bit23
		High byte storage: QB9	Bit24~bit31
Comp Value[0..15] Ch1	Channel 2 count value is 16 bits lower [QB11 QB10]	Low byte storage: QB10	bit0~bit7
		High byte storage: QB11	bit8~bit15
Name	Meaning	Input process data	Description
CNT State Ch0	First channel count status	IX0.0	0: Channel 1 stop counting. 1: Channel 1 starts counting
Clear Signal Ch0	first channel electronic probe/count clear signal	IX0.1	0: no channel 1 electron probe signal. 1: with channel 1 electron probe signal
Comp Flag Ch0	The first channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB3 IB2]	Low byte storage: IB2	Bit16~bit23
		High byte storage: IB3	Bit24~bit31
CNT Value[0..15] Ch0	The lower 16 bits of the channel 1 count value [IB5 IB4]	Low byte storage: IB4	bit0~bit7
		High byte storage: IB5	bit8~bit15
Latch	Channel 1 latch value high	Low byte	Bit16~bit23

Value[16..31]Ch0	16 bits [IB7 IB6]	storage:IB6	
		High byte storage:IB7	Bit24~bit31
Latch Value[0..15] Ch0	Lower 16 bits of channel 1 latch value [IB9 IB8]	Low byte storage:IB8	bit0~bit7
		High byte storage:IB9	bit8~bit15
CNT State Ch1	second channel counting status	IX0.0	0: Channel 2 stop counting. 1: Channel 2 starts counting
Clear Signal Ch1	second channel electronic probe/count clear signal	IX0.1	0: no channel 2 electron probe signal. 1: with channel 2 electron probe signal
Comp Flag Ch1	The second channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch1	Channel 2 count value 16 bits high [IB13 IB12]	Low byte storage:IB12	Bit16~bit23
		High byte storage:IB13	Bit24~bit31
CNT Value[0..15] Ch1	Channel 2 count value is 16 bits lower [IB15 IB14]	Low byte storage:IB14	bit0~bit7
		High byte storage:IB15	bit8~bit15
Latch Value[16..31]Ch1	Channel 2 latch value 16 bits high [IB17 IB16]	Low byte storage:IB16	Bit16~bit23
		High byte storage:IB17	Bit24~bit31
Latch Value[0..15] Ch1	Channel 2 latch value 16 bits lower [IB19 IB18]	Low byte storage:IB18	bit0~bit7
		High byte storage:IB19	bit8~bit15

- **Enable Input:** As shown in the figure, enter 1 in the control word to enable the encoder input function. Input 0 to stop counting and clear to zero.

%IW69	ARRAY [0..9] OF WORD	Only subelement...	
%IW69	WORD	1	
%IW70	WORD	2	
%IW71	WORD	8291	count
%IW72	WORD	0	
%IW73	WORD	0	
%IW74	WORD	0	
%IW75	WORD	0	
%IW76	WORD	0	
%IW77	WORD	0	
%IW78	WORD	0	
%QW0	ARRAY [0..5] OF WORD	Only subelement...	
%QW0	WORD	1	1
%QW1	WORD	0	
%QW2	WORD	0	
%QW3	WORD	0	
%QW4	WORD	0	
%QW5	WORD	0	

Figure 6-1- 105

- **Electronic probe:** ensure QX0.1 of control word is 0, input 24V and 0V voltage to terminals 3 and 4 of DF20-M-2CNT-EL-5 respectively

The electronic probe latch value can be obtained as shown in the figure below. State shows that the state is 3, indicating that counting is started and there is an electron probe signal.

%IW69	ARRAY [0..9] OF WORD	Only subelement...	
%IW69	WORD	state	3
%IW70	WORD	count	174
%IW71	WORD		32456
%IW72	WORD	latch value	174
%IW73	WORD		32456
%IW74	WORD		0
%IW75	WORD		0
%IW76	WORD		0
%IW77	WORD		0
%IW78	WORD		0
%QW0	ARRAY [0..5] OF WORD	Only subelement...	
%QW0	WORD		1
%QX0.0	BOOL		TRUE
%QX0.1	BOOL		FALSE
%QX0.2	BOOL		FALSE

Figure 6-1- 106

- **External signal trigger clear count:** write 1 in QX0.1 of control word. Input 24V and 0V voltage to terminals 3 and 4 respectively

to clear the current count value, as shown below.

%IW69	ARRAY [0..9] OF WORD	Only subelement...
%IW69	WORD	1
%IW70	WORD	174
%IW71	WORD	32455
%IW72	WORD	0
%IW73	WORD	0
%IW74	WORD	0
%IW75	WORD	0
%IW76	WORD	0
%IW77	WORD	0
%IW78	WORD	0
%QW0	ARRAY [0..5] OF WORD	Only subelement...
%QW0	WORD	3
%QX0.0	BOOL	TRUE
%QX0.1	BOOL	TRUE
%QX0.2	BOOL	FALSE

Figure 6-1- 107No external signal has been triggered

%IW69	ARRAY [0..9] OF WORD	Only subelement...
%IW69	WORD	3
%IW70	WORD	0
%IW71	WORD	0
%IW72	WORD	0
%IW73	WORD	0
%IW74	WORD	0
%IW75	WORD	0
%IW76	WORD	0
%IW77	WORD	0
%IW78	WORD	0
%QW0	ARRAY [0..5] OF WORD	Only subelement...
%QW0	WORD	3
%QX0.0	BOOL	TRUE
%QX0.1	BOOL	TRUE
%QX0.2	BOOL	FALSE

Figure 6-1- 108triggering an external signal

- **Comparison value function:** as shown in the figure below, input 1 in the control word QX0.2, and write 50000 in Comp Value [0.. 15] Ch0.

%QW0	ARRAY [0..5] OF WORD	Only subelement...
%QW0	WORD	5
%QX0.0	BOOL	TRUE
%QX0.1	BOOL	FALSE
%QX0.2	BOOL	TRUE
%QX0.3	BOOL	FALSE
%QX0.4	BOOL	FALSE
%QX0.5	BOOL	FALSE
%QX0.6	BOOL	FALSE
%QX0.7	BOOL	FALSE
%QX1.0	BOOL	FALSE
%QX1.1	BOOL	FALSE
%QX1.2	BOOL	FALSE
%QX1.3	BOOL	FALSE
%QX1.4	BOOL	FALSE
%QX1.5	BOOL	FALSE
%QX1.6	BOOL	FALSE
%QX1.7	BOOL	FALSE
%QW1	WORD	0
%QW2	WORD	50000

Figure 6-1- 109

- As shown in the figure below, the current count value is 23482, which is lower than the comparison value of 50000, and the status word is 1, indicating that the count value is less than the comparison value.

%IW69	ARRAY [0..9] OF WORD	Only subelement...
%IW69	WORD	1
%IW70	WORD	0
%IW71	WORD	23482
%IW72	WORD	0

Figure 6-1- 110

- As shown in the figure below, the current count value is 61198, which is higher than the comparison value of 50000, and the status word is 5, indicating that the count value is greater than the comparison value.

%IW69	ARRAY [0..9] OF WORD	Only subelement...
%IW69	WORD	5
%IW70	WORD	0
%IW71	WORD	61198
%IW72	WORD	0

Figure 6-1- 111

- **Pulse plus direction function:** as shown in the figure below, set the module Input Range to

Pulse and Directions mode on the webpage.

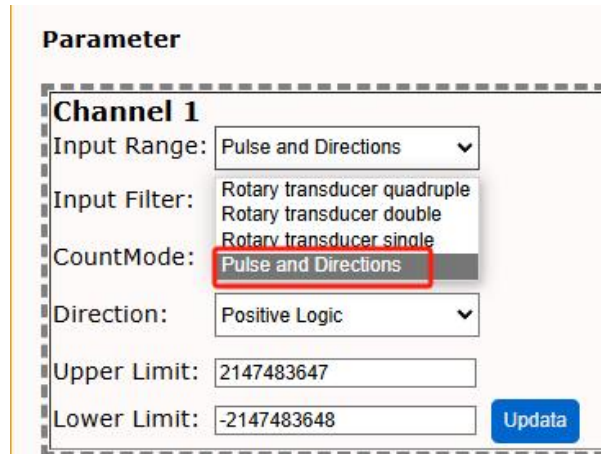


Figure 6-1- 112

- As shown in the figure below, the module is counted as 0 when it is stationary.

%IW69	ARRAY [0..9] OF WORD	Only subelements up...
%IW69	WORD	1
%IW70	WORD	0
%IW71	WORD	0
%IW72	WORD	0
%IW73	WORD	0
%IW74	WORD	0
%IW75	WORD	0
%IW76	WORD	0
%IW77	WORD	0
%IW78	WORD	0
%QW0	ARRAY [0..5] OF WORD	Only subelements up...
%QW0	WORD	1
%QW1	WORD	0

Figure 6-1- 113

- As shown in the figure below, pulse signals are input to module B1+and B1 terminals, and at this time, 0V signals are input to A1+and A1 terminals. You can see the count value increasing.

%IW69	ARRAY [0..9] OF WORD	Only subelements up...
%IW69	WORD	1
%IW70	WORD	0
%IW71	WORD	9086
%IW72	WORD	0
%IW73	WORD	0
%IW74	WORD	0
%IW75	WORD	0
%IW76	WORD	0
%IW77	WORD	0
%IW78	WORD	0
%QW0	ARRAY [0..5] OF WORD	Only subelements up...
%QW0	WORD	1

Figure 6-1- 114

- Next, input 5V signal to A1+ and A1 - terminals. You can see the count decreasing.

%IW69	ARRAY [0..9] OF WORD	Only subelements up...
%IW69	WORD	1
%IW70	WORD	65535
%IW71	WORD	62970
%IW72	WORD	0

Figure 6-1- 115

6.1.9.6 DF20-M-2CNT-EL-4 encoder input module

- This module is a 2-channel encoder input module, this routine takes the first channel as an example, and the second channel is used in the same way as the first channel.
- The module parameters can be configured in the web page as shown below.

Parameter

Channel 1	Channel 2
Input Range: Rotary transducer quadrup▼	Input Range: Rotary transducer quadrup▼
Input Filter: 4MHz▼	Input Filter: 4MHz▼
CountMode: Line Counter▼	CountMode: Line Counter▼
Direction: Positive Logic▼	Direction: Positive Logic▼
Upper Limit:	Upper Limit:
Lower Limit: Update	Lower Limit: Update

Figure 6-1- 116

- The module process data description is shown below.

Table 7.1 7

Name	Meaning	Outputting process data	Description
CNT Ctl Ch0	first channel control word	QX0.0	0: Channel 1 stops counting, original count is cleared to zero. 1:Channel 1 starts counting
		QX0.1	0: Enable channel 1 electronic probe function. 1:Enable channel 1 external signal trigger counting clear function
		QX0.2	0: Channel 1 comparison value deactivated.

			1:Enable channel 1 compare value
Comp Value[16..31] Ch0	Channel 1 count value 16 bits high [QB3 QB2]	Low byte storage: QB2	Bit16~bit23
		High byte storage: QB3	Bit24~bit31
Comp Value[0..15] Ch0	Channel 1 count value is 16 bits lower [QB5 QB4]	Low byte storage: QB4	bit0~bit7
		High byte storage: QB5	bit8~bit15
CNT Ctl Ch1	second channel control word	QX1.0	0: Channel 2 stops counting, original count is cleared to zero. 1: Channel 2 starts counting
		QX1.1	0: Enable channel 2 electronic probe function. 1:Enable channel 2 external signal to trigger the counting clearing function
		QX1.2	0: Channel 2 comparative value deactivated. 1:Enable channel 2 compare value
Comp Value[16..31] Ch1	Channel 2 count value 16 bits high [QB9 QB8]	Low byte storage: QB8	Bit16~bit23
		High byte storage: QB9	Bit24~bit31
Comp Value[0..15] Ch1	Channel 2 count value is 16 bits lower [QB11 QB10]	Low byte storage: QB10	bit0~bit7
		High byte storage: QB11	bit8~bit15
Name	Meaning	Input process data	Description
CNT State Ch0	First channel count status	IX0.0	0: Channel 1 stop counting. 1:Channel 1 starts counting
Clear Signal Ch0	first channel electronic probe/count clear signal	IX0.1	0: no channel 1 electron probe signal. 1: with channel 1 electron probe signal
Comp Flag Ch0	The first channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch0	Channel 1 count value high 16 bits [IB3 IB2]	Low byte storage:IB2	Bit16~bit23
		High byte storage:IB3	Bit24~bit31
CNT Value[0..15] Ch0	The lower 16 bits of the channel 1 count value [IB5 IB4]	Low byte storage:IB4	bit0~bit7
		High byte storage:IB5	bit8~bit15
Latch Value[16..31]Ch0	Channel 1 latch value high 16 bits [IB7 IB6]	Low byte storage:IB6	Bit16~bit23
		High byte storage:IB7	Bit24~bit31
Latch Value[0..15] Ch0	Lower 16 bits of channel 1 latch value [IB9 IB8]	Low byte storage:IB8	bit0~bit7
		High byte	bit8~bit15

		storage:IB9	
CNT State Ch1	second channel counting status	IX0.0	0: Channel 2 stop counting. 1: Channel 2 starts counting
Clear Signal Ch1	second channel electronic probe/count clear signal	IX0.1	0: no channel 2 electron probe signal. 1: with channel 2 electron probe signal
Comp Flag Ch1	The second channel compares the matching flags that	IX0.2	0: the count value is less than the comparison value. 1: the count value is greater than the comparative value
CNT Value[16..31] Ch1	Channel 2 count value 16 bits high [IB13 IB12]	Low byte storage:IB12	Bit16~bit23
		High byte storage:IB13	Bit24~bit31
CNT Value[0..15] Ch1	Channel 2 count value is 16 bits lower [IB15 IB14]	Low byte storage:IB14	bit0~bit7
		High byte storage:IB15	bit8~bit15
Latch Value[16..31]Ch1	Channel 2 latch value 16 bits high [IB17 IB16]	Low byte storage:IB16	Bit16~bit23
		High byte storage:IB17	Bit24~bit31
Latch Value[0..15] Ch1	Channel 2 latch value 16 bits lower [IB19 IB18]	Low byte storage:IB18	bit0~bit7
		High byte storage:IB19	bit8~bit15

- **Enable Inputs:** As shown in the figure below, entering a 1 in the control word will enable the encoder input function. Entering 0 stops the count and clears it.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	0
%IW81	WORD	1092
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	1
%QW7	WORD	0
%QW8	WORD	0
%QW9	WORD	0
%QW10	WORD	0
%QW11	WORD	0

Figure 6-1- 117

- **Electronic probe:** ensure that QX12.1 of control word is 0, and input 24V and 0V voltage to terminals 3 and 4 of DF20-M-2CNT-EL-4 respectively

Enable the electron probe latch value, as shown in the figure below. State shows that the state is 3, indicating that counting is started and there is an electron probe signal.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	3
%IW80	WORD	0
%IW81	WORD	3503
%IW82	WORD	0
%IW83	WORD	3503
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	1
%QX12.0	BOOL	TRUE
%QX12.1	BOOL	FALSE
%QX12.2	BOOL	FALSE

Figure 6-1- 118

- **External signal triggers clearing count:** write 1 in QX12.1 of control word. Input 24V and 0V voltage at terminals 3 and 4 respectively

The current count value can be cleared as shown below.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	0
%IW81	WORD	3558
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	3
%QX12.0	BOOL	TRUE
%QX12.1	BOOL	TRUE
%QX12.2	BOOL	FALSE

Figure 6-1- 119No external signal has been triggered

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	3
%IW80	WORD	0
%IW81	WORD	0
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	3
%QX12.0	BOOL	TRUE
%QX12.1	BOOL	TRUE
%QX12.2	BOOL	FALSE

Figure 6-1- 120triggering an external signal

- **Comparison value function:** as shown in the figure below, input 1 in the control word QX12.2, and write 10000 in Comp Value [0.. 15] Ch0.

%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	5
%QX12.0	BOOL	TRUE
%QX12.1	BOOL	FALSE
%QX12.2	BOOL	TRUE
%QX12.3	BOOL	FALSE
%QX12.4	BOOL	FALSE
%QX12.5	BOOL	FALSE
%QX12.6	BOOL	FALSE
%QX12.7	BOOL	FALSE
%QX13.0	BOOL	FALSE
%QX13.1	BOOL	FALSE
%QX13.2	BOOL	FALSE
%QX13.3	BOOL	FALSE
%QX13.4	BOOL	FALSE
%QX13.5	BOOL	FALSE
%QX13.6	BOOL	FALSE
%QX13.7	BOOL	FALSE
%QW7	WORD	0
%QW8	WORD	10000

Figure 6-1- 121

- As shown in the figure below, the current count value is 3904, which is lower than the comparison value of 10000, and the status word is 1, indicating that the count value is less

than the comparison value.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	0
%IW81	WORD	3904
%IW82	WORD	0

Figure 6-1- 122

- As shown in the figure below, the current count value is 10850, which is higher than the comparison value of 10000, and the status word is 5, indicating that the count value is greater than the comparison value.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	5
%IW80	WORD	0
%IW81	WORD	10850
%IW82	WORD	0

Figure 6-1- 123

- **Pulse plus direction function:** as shown in the figure below, set the module Input Range to Pulse and Directions mode on the webpage.

Parameter

Channel 1

Input Range: Pulse and Directions

Input Filter: Rotary transducer quadruple
Rotary transducer double
Rotary transducer single

CountMode: Pulse and Directions

Direction: Positive Logic

Upper Limit: 2147483647

Lower Limit: -2147483648

Update

Figure 6-1- 124

- As shown in the figure below, the module is counted as 0 when it is stationary.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	0
%IW81	WORD	0
%IW82	WORD	0
%IW83	WORD	0
%IW84	WORD	0
%IW85	WORD	0
%IW86	WORD	0
%IW87	WORD	0
%IW88	WORD	0
%QW6	ARRAY [0..5] OF WORD	Only subelements up...
%QW6	WORD	1
%QX12.0	BOOL	TRUE
%QX12.1	BOOL	FALSE

Figure 6-1- 125

- As shown in the figure below, pulse signals are input to module B1+and B1 terminals, and at this time, 0V signals are input to A1+and A1 terminals. You can see the count value increasing.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	0
%IW81	WORD	1701
%IW82	WORD	0

Figure 6-1- 126

- Next, input 24V signal to A1+and A1 - terminals. You can see the count decreasing.

%IW79	ARRAY [0..9] OF WORD	Only subelements up...
%IW79	WORD	1
%IW80	WORD	65535
%IW81	WORD	64784
%IW82	WORD	0

Figure 6-1- 127

6.1.10 Pulse Output Module Usage Routines

6.1.10.1 DF20-M-2PWM pulse output module

- This module is a 2-channel pulse output module, this routine program takes the first channel

as an example, and the second channel is used in the same way as the first channel.

- As shown in the figure below, you can configure the module parameters in the web page, and refer to the detailed configuration meaning [4.45 DF20-M-2PWM channel configuration](#).

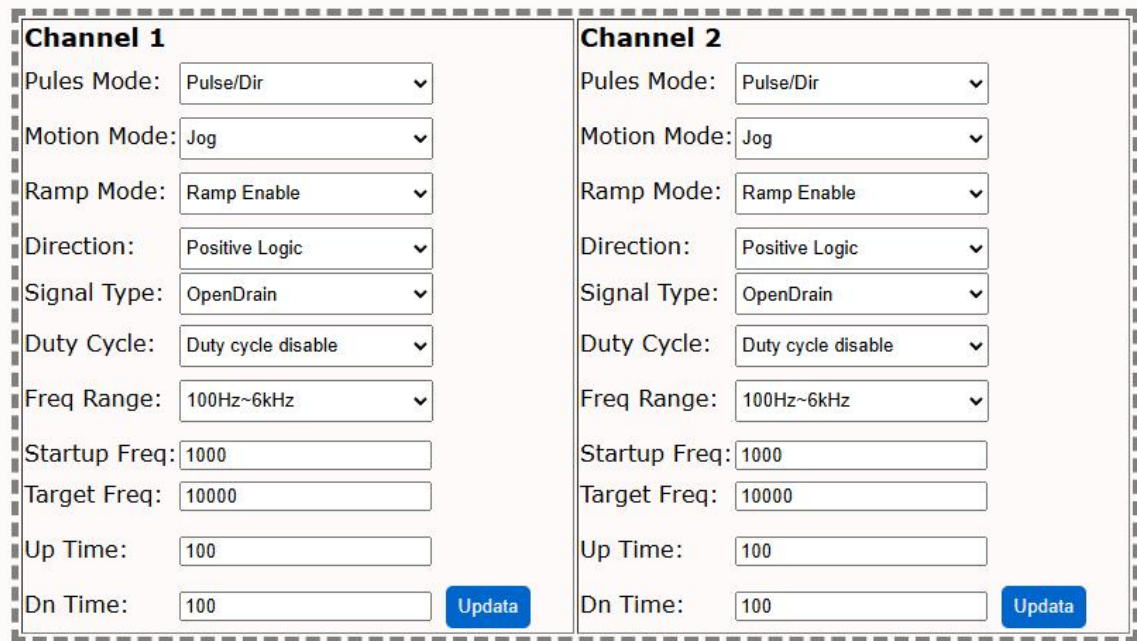


Figure 6-1- 128

- The module process data description is shown below.

Table 7.1 8

Name	Meaning	Outputting process data	Description
CtrlWord CH1 first channel control word	Stop bit CH1	QX0.0	0: Channel 1 without emergency stop. 1: Channel 1 emergency stop.
	Jog Enable bit CH1	QX0.1	0->1: Channel 1 is turned on for point motion. 1->0: Channel 1 stops pointing motion.
	Jog Direction bit CH1	QX0.2	0: Positive rotation of channel 1 pointing direction. 1: Reverse direction of channel 1 pointing.
	Position Enable bit CH1	QX0.3	0->1: Channel 1 is turned on for positioning motion. 1->0: channel 1 stops the positioning movement.
	Position Clear bit CH1	QX0.4	0: Channel 1 position counts normally 1: Zero the current position of channel 1
Target Duty Cycle CH1	Channel 1 duty cycle setting, 1/1000 resolution	QB2	bit0~bit7
		QB3	bit8~bit15
Target Position or frequency [16..31]CH1	Target position setting in channel 1 pulse plus direction positioning mode, or frequency setting 16 bits higher in PWM	Low byte storage: QB4	Bit16~bit23
		High byte storage: QB5	Bit24~bit31

	mode [QB5 QB4]		
Target Position or frequency [0..15] CH1	Channel 1 pulse plus direction positioning mode target position setting, or frequency setting lower 16 bits in PWM mode [QB7 QB6]	Low byte storage: QB6	bit0~bit7
		High byte storage: QB7	bit8~bit15
CtrlWord CH2 second channel control word	Stop bit CH2	QX1.0	0: Channel 2 without emergency stop. 1:Channel 2 emergency stop.
	Jog Enable bit CH2	QX1.1	0->1: Channel 2 is turned on for point motion. 1->0: Channel 2 stops pointing motion.
	Jog Direction bit CH2	QX1.2	0: Positive rotation of channel 2 pointing direction. 1: Reverse direction of channel 2 pointing.
	Position Enable bit CH2	QX1.3	0->1: Channel 2 is turned on for positioning motion. 1->0: Channel 2 stops the positioning movement.
	Position Clear bit CH2	QX1.4	0: Channel 2 position counts normally 1:Zero the current position of channel 2
Target Duty Cycle CH2	Channel 2 duty cycle setting, 1/1000 resolution	QB8	bit0~bit7
		QB9	bit8~bit15
Target Position or frequency [16..31]CH2	Target position setting in channel 2 pulse plus direction positioning mode, or frequency setting 16 bits higher in PWM mode [QB11 QB10]	Low byte storage: QB10	Bit16~bit23
		High byte storage: QB11	Bit24~bit31
Target Position or frequency [0..15] CH2	Channel 2 pulse plus direction positioning mode target position setting, or frequency setting lower 16 bits in PWM mode [QB13 QB12]	Low byte storage: QB12	bit0~bit7
		High byte storage: QB13	bit8~bit15
Name	Meaning	Input process data	Description
StateWord CH1 the first channel status word	Pulse Fault bit CH1 first channel fault status	IX0.0	0: Channel 1 normal. 1: Channel 1 failure
	CtrlWord Fault bit CH1 first channel process data status	IX0.1	0:Channel 1 process data is normal. 1:Channel 1 process data exception.
	Position Complete bit CH1 first channel signal output status	IX0.2	0:Channel 1 is in signal output state. 1:Channel 1 has no signal output status.
	Config Fault bit CH1 first channel configuration data status	IX0.3	0:Channel 1 configuration data is normal. 1:Channel 1 configuration data anomaly.
PulseCount[16..31] CH1	Channel 1 actual position or PWM output number is 16 bits higher [IB3 IB2]	Low byte storage:IB2	Bit16~bit23
		High byte	Bit24~bit31

		storage:IB3	
PulseCount[0..15] CH1	Actual position or PWM output number of channel 1 is 16 bits lower [IB5 IB4]	Low byte storage:IB4	bit0~bit7
		High byte storage:IB5	bit8~bit15
StateWord CH2 second channel status word	Pulse Fault bit CH2 second channel fault status	IX1.0	0: Channel 2 normal. 1: Channel 2 failure
	CtrlWord Fault bit CH2 second channel process data status	IX1.1	0: Channel 2 process data is normal. 1:Channel 2 process data anomaly.
	Position Complete bit CH2 second channel signal output status	IX1.2	0: Channel 2 is in signal output state. 1:Channel 2 has no signal output status;
	Config Fault bit CH2 second channel configuration data status	IX1.3	0:Channel 2 configuration data is normal. 1:Channel 2 configuration data anomaly.
PulseCount[16..31] CH2	Actual position of channel 2 or high 16 bits of PWM output number [IB9 IB8]	Low byte storage:IB8	Bit16~bit23
		High byte storage:IB9	Bit24~bit31
PulseCount[0..15] CH2	Actual position of channel 2 or lower 16 bits of PWM output number [IB11 IB10]	Low byte storage: IB10	bit0~bit7
		High byte storage: IB11	bit8~bit15

Remarks.

- Before each module configuration operation, the current operating mode should be stopped and the signal output should be turned off before execution.
- When there is signal output, the module cannot be configured, otherwise ConfigFaultbit is set to 1.
- PositionEnablebit cannot be operated when the motion mode is jogging, otherwise CtrlWordFaultbit is set to 1.

JogEnablebit cannot be operated when the motion mode is positioning, otherwise CtrlWordFaultbit is set to 1.

- Pulse plus Direction Mode + Tap Mode Instructions for use, the

1) DF20-M-2PWM module CH1 channel is set as pulse plus direction mode, the output mode is set as inching mode, the frequency ramp enable is enabled, the pulse frequency rise buffer time is set as 100ms, the fall buffer time is 100ms, the start frequency is set as 1000Hz, the target

frequency is 10000Hz, and the pulse output direction is positive logic. The configuration diagram is shown in the following figure.

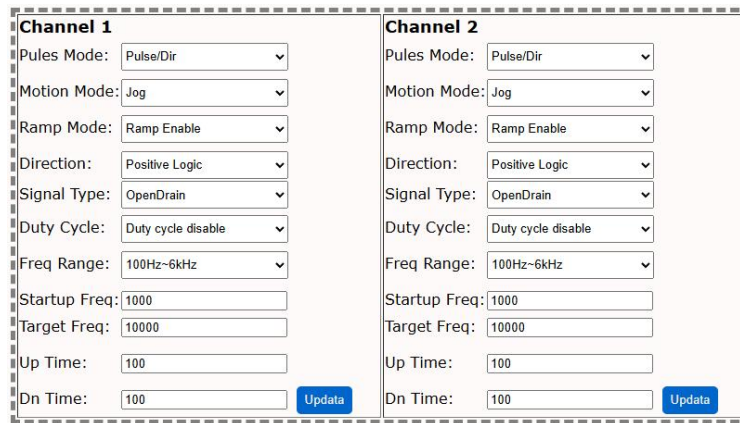
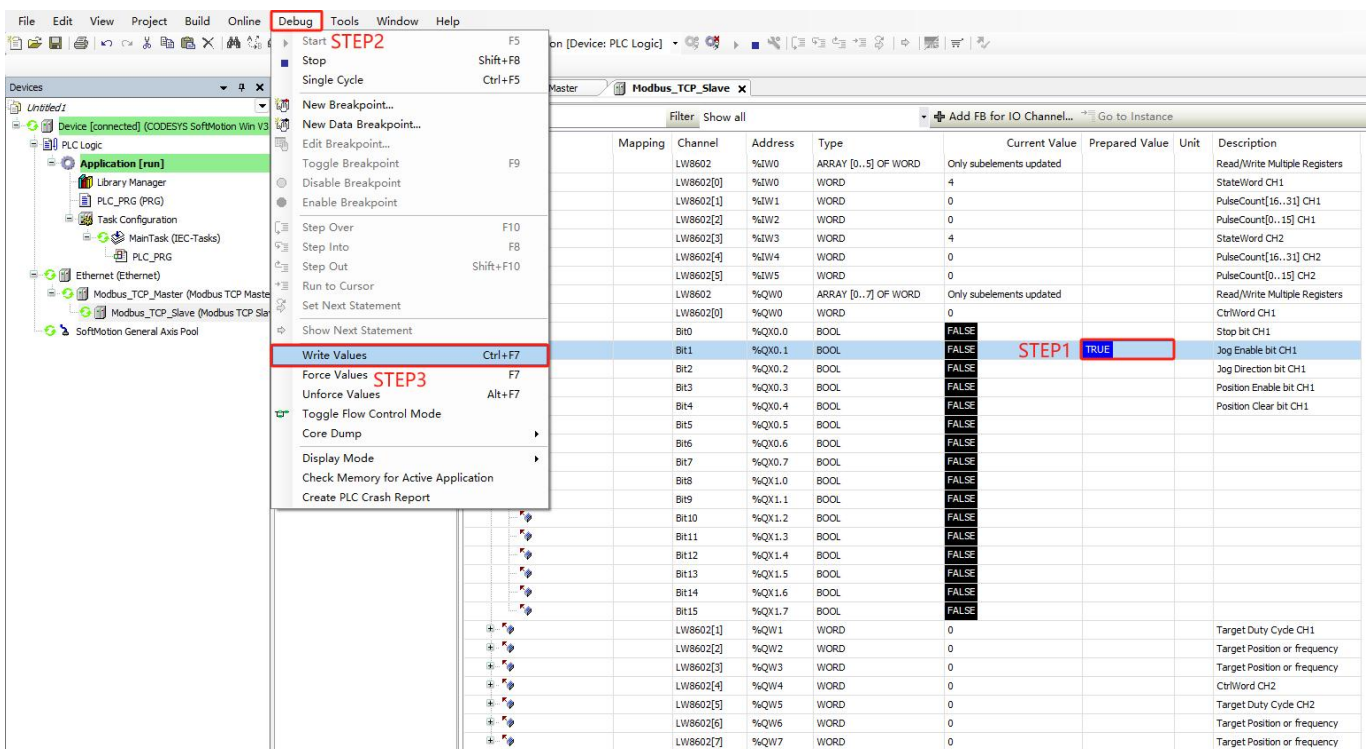


Figure 6-1- 129

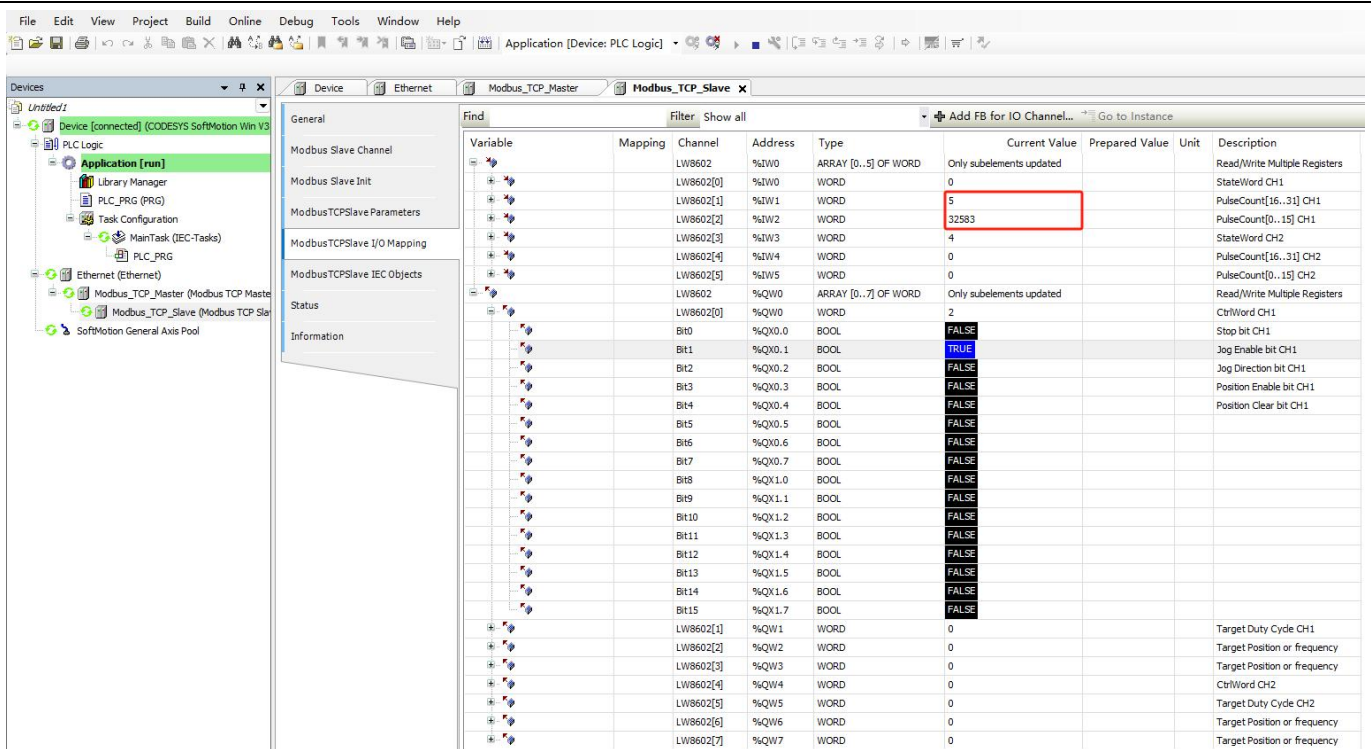
2) Jog Enable bit CH1 writes "0" to enable inching movement.



Mapping	Channel	Address	Type	Current Value	Prepared Value	Unit	Description
	LW8602[0]	%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
	LW8602[1]	%IW1	WORD	4			StateWord CH1
	LW8602[2]	%IW2	WORD	0			PulseCount[16..31] CH1
	LW8602[3]	%IW3	WORD	4			StateWord CH2
	LW8602[4]	%IW4	WORD	0			PulseCount[16..31] CH2
	LW8602[5]	%IW5	WORD	0			PulseCount[16..31] CH2
	LW8602[6]	%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
	LW8602[7]	%QW1	WORD	0			CtrlWord CH1
	Bit0	%QX0.0	BOOL	FALSE	STEP1 TRUE		Jog Enable bit CH1
	Bit1	%QX0.1	BOOL	FALSE			Jog Enable bit CH1
	Bit2	%QX0.2	BOOL	FALSE			Jog Direction bit CH1
	Bit3	%QX0.3	BOOL	FALSE			Position Enable bit CH1
	Bit4	%QX0.4	BOOL	FALSE			Position Clear bit CH1
	Bit5	%QX0.5	BOOL	FALSE			
	Bit6	%QX0.6	BOOL	FALSE			
	Bit7	%QX0.7	BOOL	FALSE			
	Bit8	%QX1.0	BOOL	FALSE			
	Bit9	%QX1.1	BOOL	FALSE			
	Bit10	%QX1.2	BOOL	FALSE			
	Bit11	%QX1.3	BOOL	FALSE			
	Bit12	%QX1.4	BOOL	FALSE			
	Bit13	%QX1.5	BOOL	FALSE			
	Bit14	%QX1.6	BOOL	FALSE			
	Bit15	%QX1.7	BOOL	FALSE			
	LW8602[1]	%QW1	WORD	0			Target Duty Cycle CH1
	LW8602[2]	%QW2	WORD	0			Target Position or frequency
	LW8602[3]	%QW3	WORD	0			Target Position or frequency
	LW8602[4]	%QW4	WORD	0			CtrlWord CH2
	LW8602[5]	%QW5	WORD	0			Target Duty Cycle CH2
	LW8602[6]	%QW6	WORD	0			Target Position or frequency
	LW8602[7]	%QW7	WORD	0			Target Position or frequency

Figure 6-1- 130

3) At this time, observe the oscilloscope, and the current pulse output frequency is 10000HZ. The number of DF20-M-2PWM module pulses is continuously accumulated, as shown in the figure below.



Variable	Mapping	Channel	Address	Type	Current Value	Prepared Value	Unit	Description
		LW8602[0]	%IW0	ARRAY [0..5] OF WORD	0			Read/Write Multiple Registers
		LW8602[1]	%IW1	WORD	5			StateWord CH1
		LW8602[2]	%IW2	WORD	32583			PulseCount[16..31] CH1
		LW8602[3]	%IW3	WORD	4			StateWord CH2
		LW8602[4]	%IW4	WORD	0			PulseCount[16..31] CH2
		LW8602[5]	%IW5	WORD	0			PulseCount[0..15] CH2
		LW8602	%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
		LW8602[0]	%QW0	WORD	2			CtrlWord CH1
		Bit0	%QX0.0	BOOL	FALSE			Stop bit CH1
		Bit1	%QX0.1	BOOL	TRUE			Jog Enable bit CH1
		Bit2	%QX0.2	BOOL	FALSE			Jog Direction bit CH1
		Bit3	%QX0.3	BOOL	FALSE			Position Enable bit CH1
		Bit4	%QX0.4	BOOL	FALSE			Position Clear bit CH1
		Bit5	%QX0.5	BOOL	FALSE			
		Bit6	%QX0.6	BOOL	FALSE			
		Bit7	%QX0.7	BOOL	FALSE			
		Bit8	%QX1.0	BOOL	FALSE			
		Bit9	%QX1.1	BOOL	FALSE			
		Bit10	%QX1.2	BOOL	FALSE			
		Bit11	%QX1.3	BOOL	FALSE			
		Bit12	%QX1.4	BOOL	FALSE			
		Bit13	%QX1.5	BOOL	FALSE			
		Bit14	%QX1.6	BOOL	FALSE			
		Bit15	%QX1.7	BOOL	FALSE			
		LW8602[1]	%QW1	WORD	0			Target Duty Cycle CH1
		LW8602[2]	%QW2	WORD	0			Target Position or frequency
		LW8602[3]	%QW3	WORD	0			Target Position or frequency
		LW8602[4]	%QW4	WORD	0			CtrlWord CH2
		LW8602[5]	%QW5	WORD	0			Target Duty Cycle CH2
		LW8602[6]	%QW6	WORD	0			Target Position or frequency
		LW8602[7]	%QW7	WORD	0			Target Position or frequency

Figure 6-1- 131

4) Jog Enable bit CH1 writes "0" to stop inching movement.

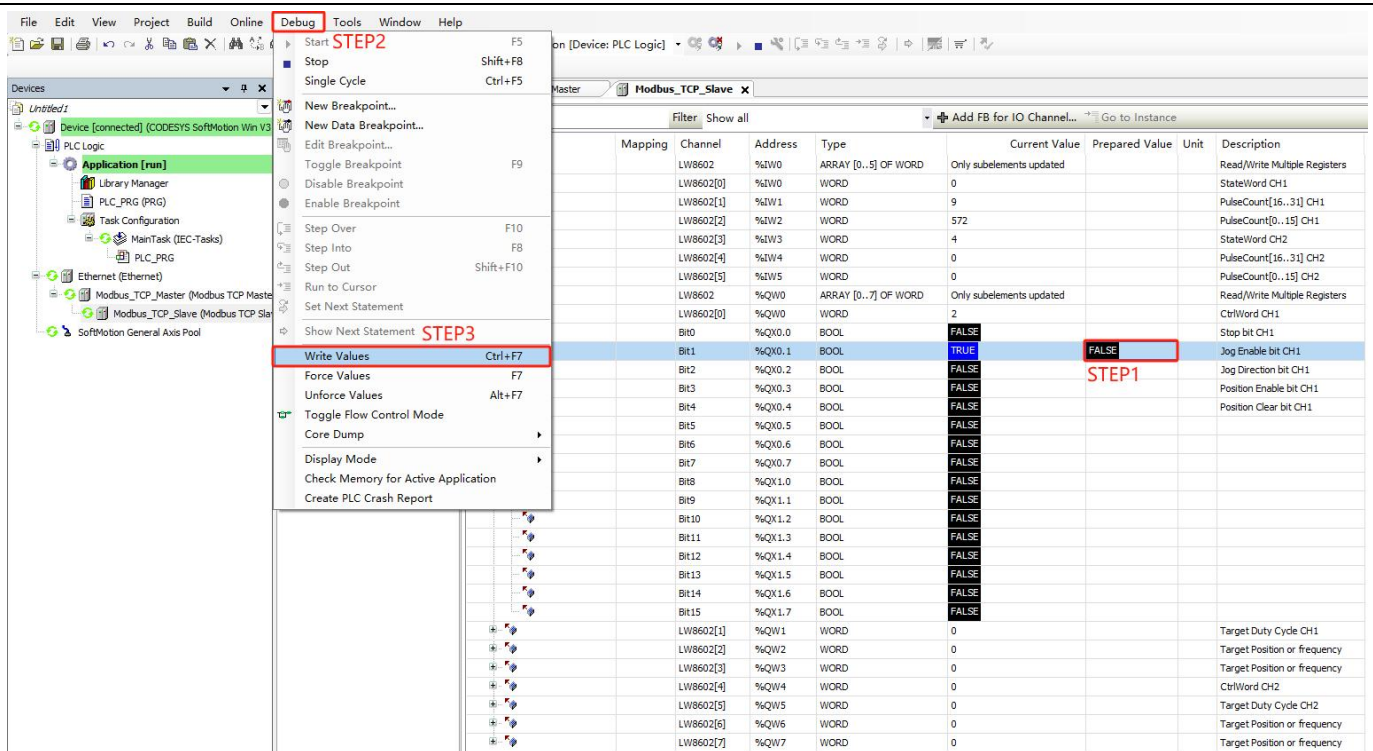


Figure 6-1- 132

5) Position Clear bit CH1 writes "1" to clear the current accumulated pulse number. After clearing, Position Clear bit CH1 writes "0".

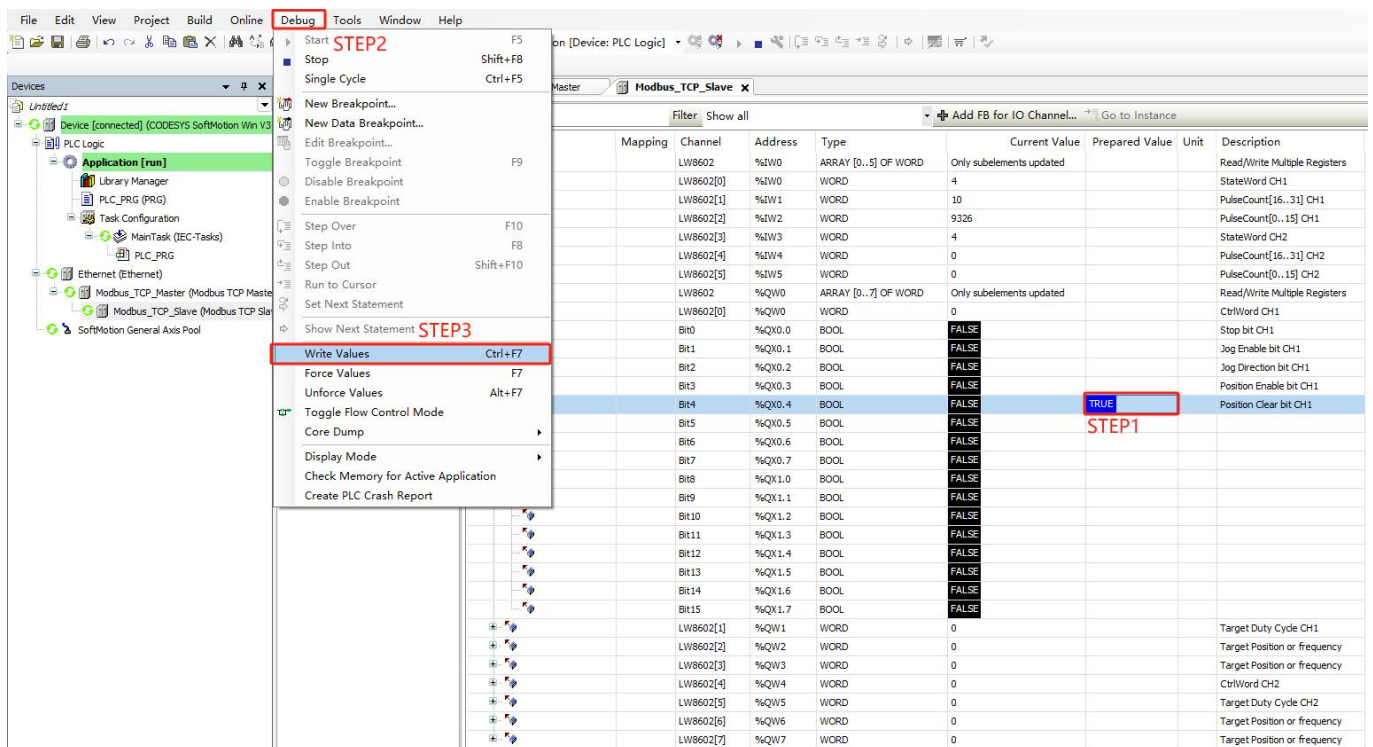


Figure 6-1- 133

Address	Type	Current Value	Prepared Value	Unit	Description
%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
%IW0	WORD	4			StateWord CH1
%IW1	WORD	0			PulseCount[16..31] CH1
%IW2	WORD	0			PulseCount[0..15] CH1
%IW3	WORD	4			StateWord CH2
%IW4	WORD	0			PulseCount[16..31] CH2
%IW5	WORD	0			PulseCount[0..15] CH2
%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
%QW0	WORD	16			CtrlWord CH1
%QX0.0	BOOL	FALSE			Stop bit CH1
%QX0.1	BOOL	FALSE			Jog Enable bit CH1
%QX0.2	BOOL	FALSE	0 Byte 0		Jog Direction bit CH1
%QX0.3	BOOL	FALSE			Position Enable bit CH1
%QX0.4	BOOL	TRUE			Position Clear bit CH1
%QX0.5	BOOL	FALSE			
%QX0.6	BOOL	FALSE			
%QX0.7	BOOL	FALSE			
%QX1.0	BOOL	FALSE			
%QX1.1	BOOL	FALSE			
%QX1.2	BOOL	FALSE			
%QX1.3	BOOL	FALSE			
%QX1.4	BOOL	FALSE			
%QX1.5	BOOL	FALSE			
%QX1.6	BOOL	FALSE			
%QX1.7	BOOL	FALSE			
%QW1	WORD	0			Target Duty Cycle CH1
%QW2	WORD	0			Target Position or frequency
%QW3	WORD	0			Target Position or frequency
%QW4	WORD	0			CtrlWord CH2
%QW5	WORD	0			Target Duty Cycle CH2
%QW6	WORD	0			Target Position or frequency
%QW7	WORD	0			Target Position or frequency

Figure 6-1- 134

➤ Pulse plus Direction Mode + Relative Position Mode Usage Notes

1) DF20-M-2PWM module CH1 channel is set to pulse plus direction mode, output mode is set to relative position mode, frequency ramp enable is enabled, pulse frequency rise buffer time is set to 100ms, fall buffer time is set to 100ms, start frequency is set to 1000Hz, target frequency is 10000Hz, pulse output direction is positive logic, The CH1 channel configuration diagram is shown in the following figure. To switch modes, you need to clear "Jog Enable bit CH1" to 0.

Channel 1	Channel 2
Pules Mode: Pulse/Dir	Pules Mode: Pulse/Dir
Motion Mode: Relative Position	Motion Mode: Jog
Ramp Mode: Ramp Enable	Ramp Mode: Ramp Enable
Direction: Positive Logic	Direction: Positive Logic
Signal Type: OpenDrain	Signal Type: OpenDrain
Duty Cycle: Duty cycle disable	Duty Cycle: Duty cycle disable
Freq Range: 100Hz~6kHz	Freq Range: 100Hz~6kHz
Startup Freq: 1000	Startup Freq: 1000
Target Freq: 10000	Target Freq: 10000
Up Time: 100	Up Time: 100
Dn Time: 100 Update	Dn Time: 100 Update

Figure 6-1- 135

2) Set the number of target output pulses to 5000.

Address	Type	Current Value	Prepared Value	Unit	Description
%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
%IW0	WORD	4			StateWord CH1
%IW1	WORD	0			PulseCount[16..31] CH1
%IW2	WORD	0			PulseCount[0..15] CH1
%IW3	WORD	4			StateWord CH2
%IW4	WORD	0			PulseCount[16..31] CH2
%IW5	WORD	0			PulseCount[0..15] CH2
%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
%QW0	WORD	0			CtrlWord CH1
%QX0.0	BOOL	FALSE			Stop bit CH1
%QX0.1	BOOL	FALSE			Jog Enable bit CH1
%QX0.2	BOOL	FALSE			Jog Direction bit CH1
%QX0.3	BOOL	FALSE			Position Enable bit CH1
%QX0.4	BOOL	FALSE			Position Clear bit CH1
%QX0.5	BOOL	FALSE			
%QX0.6	BOOL	FALSE			
%QX0.7	BOOL	FALSE			
%QX1.0	BOOL	FALSE			
%QX1.1	BOOL	FALSE			
%QX1.2	BOOL	FALSE			
%QX1.3	BOOL	FALSE			
%QX1.4	BOOL	FALSE			
%QX1.5	BOOL	FALSE			
%QX1.6	BOOL	FALSE			
%QX1.7	BOOL	FALSE			
%QW1	WORD	0			Target Duty Cycle CH1
%QW2	WORD	0	5000		Target Position or frequency
%QW3	WORD	0			Target Position or frequency
%QW4	WORD	0			CtrlWord CH2
%QW5	WORD	0			Target Duty Cycle CH2
%QW6	WORD	0			Target Position or frequency
%QW7	WORD	0			Target Position or frequency

Figure 6-1- 136

3) Enable module pulse output.

Address	Type	Current Value	Prepared Value	Unit	Description
%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
%IW0	WORD	4			StateWord CH1
%IW1	WORD	0			PulseCount[16..31] CH1
%IW2	WORD	0			PulseCount[0..15] CH1
%IW3	WORD	4			StateWord CH2
%IW4	WORD	0			PulseCount[16..31] CH2
%IW5	WORD	0			PulseCount[0..15] CH2
%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
%QW0	WORD	0			CtrlWord CH1
%QX0.0	BOOL	FALSE			Stop bit CH1
%QX0.1	BOOL	FALSE			Jog Enable bit CH1
%QX0.2	BOOL	FALSE			Jog Direction bit CH1
%QX0.3	BOOL	FALSE	TRUE		Position Enable bit CH1
%QX0.4	BOOL	FALSE			Position Clear bit CH1
%QX0.5	BOOL	FALSE			
%QX0.6	BOOL	FALSE			
%QX0.7	BOOL	FALSE			
%QX1.0	BOOL	FALSE			
%QX1.1	BOOL	FALSE			
%QX1.2	BOOL	FALSE			
%QX1.3	BOOL	FALSE			
%QX1.4	BOOL	FALSE			
%QX1.5	BOOL	FALSE			
%QX1.6	BOOL	FALSE			
%QX1.7	BOOL	FALSE			
%QW1	WORD	0			Target Duty Cycle CH1
%QW2	WORD	0			Target Position or frequency
%QW3	WORD	5000			Target Position or frequency
%QW4	WORD	0			CtrlWord CH2
%QW5	WORD	0			Target Duty Cycle CH2
%QW6	WORD	0			Target Position or frequency
%QW7	WORD	0			Target Position or frequency

Figure 6-1- 137

4) The current pulse count is accumulated to 5000.

Address	Type	Current Value	Prepared Value	Unit	Description
%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
%IW0	WORD	4			StateWord CH1
%IW1	WORD	0			PulseCount[16..31] CH1
%IW2	WORD	5000			PulseCount[0..15] CH1
%IW3	WORD	4			StateWord CH2
%IW4	WORD	0			PulseCount[16..31] CH2
%IW5	WORD	0			PulseCount[0..15] CH2
%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
%QW0	WORD	8			CtrlWord CH1
%QX0.0	BOOL	FALSE			Stop bit CH1
%QX0.1	BOOL	FALSE			Jog Enable bit CH1
%QX0.2	BOOL	FALSE			Jog Direction bit CH1
%QX0.3	BOOL	TRUE			Position Enable bit CH1
%QX0.4	BOOL	FALSE			Position Clear bit CH1
%QX0.5	BOOL	FALSE			
%QX0.6	BOOL	FALSE			
%QX0.7	BOOL	FALSE			
%QX1.0	BOOL	FALSE			
%QX1.1	BOOL	FALSE			
%QX1.2	BOOL	FALSE			
%QX1.3	BOOL	FALSE			
%QX1.4	BOOL	FALSE			
%QX1.5	BOOL	FALSE			
%QX1.6	BOOL	FALSE			
%QX1.7	BOOL	FALSE			
%QW1	WORD	0			Target Duty Cycle CH1
%QW2	WORD	0			Target Position or frequency
%QW3	WORD	5000			Target Position or frequency
%QW4	WORD	0			CtrlWord CH2
%QW5	WORD	0			Target Duty Cycle CH2
%QW6	WORD	0			Target Position or frequency
%QW7	WORD	0			Target Position or frequency

Figure 6-1- 138

➤ PWM Mode Instructions

1) The DF20-M-2PWM module CH1 channel is set to PWM mode, and the PWM frequency range of 100Hz-6kHz is set as shown in the figure below.

Channel 1	Channel 2
Pules Mode: PWM	Pules Mode: Pulse/Dir
Motion Mode: Relative Position	Motion Mode: Jog
Ramp Mode: Ramp Enable	Ramp Mode: Ramp Enable
Direction: Positive Logic	Direction: Positive Logic
Signal Type: OpenDrain	Signal Type: OpenDrain
Duty Cycle: Duty cycle disable	Duty Cycle: Duty cycle disable
Freq Range: 100Hz~6kHz	Freq Range: 100Hz~6kHz
Startup Freq: 1000	Startup Freq: 1000
Target Freq: 10000	Target Freq: 10000
Up Time: 100	Up Time: 100
Dn Time: 100	Dn Time: 100
Update	Update

Figure 6-1- 139

2) Set the PWM output frequency and observe the continuous output of the DF20-M-2PWM module pulse of the oscilloscope, and the number of pulses is accumulating.

Address	Type	Current Value	Prepared Value	Unit	Description
%IW0	ARRAY [0..5] OF WORD	Only subelements updated			Read/Write Multiple Registers
%IW0	WORD	0			StateWord CH1
%IW1	WORD	0 STEP2			PulseCount[16..31] CH1
%IW2	WORD	3119			PulseCount[0..15] CH1
%IW3	WORD	4			StateWord CH2
%IW4	WORD	0			PulseCount[16..31] CH2
%IW5	WORD	0			PulseCount[0..15] CH2
%QW0	ARRAY [0..7] OF WORD	Only subelements updated			Read/Write Multiple Registers
%QW0	WORD	0			CtrlWord CH1
%QX0.0	BOOL	FALSE			Stop bit CH1
%QX0.1	BOOL	FALSE			Jog Enable bit CH1
%QX0.2	BOOL	FALSE			Jog Direction bit CH1
%QX0.3	BOOL	FALSE			Position Enable bit CH1
%QX0.4	BOOL	FALSE			Position Clear bit CH1
%QX0.5	BOOL	FALSE			
%QX0.6	BOOL	FALSE			
%QX0.7	BOOL	FALSE			
%QX1.0	BOOL	FALSE			
%QX1.1	BOOL	FALSE			
%QX1.2	BOOL	FALSE			
%QX1.3	BOOL	FALSE			
%QX1.4	BOOL	FALSE			
%QX1.5	BOOL	FALSE			
%QX1.6	BOOL	FALSE			
%QX1.7	BOOL	FALSE			
%QW1	WORD	0			Target Duty Cycle CH1
%QW2	WORD	0 STEP1			Target Position or frequency
%QW3	WORD	500			Target Position or frequency
%QW4	WORD	0			CtrlWord CH2
%QW5	WORD	0			Target Duty Cycle CH2
%QW6	WORD	0			Target Position or frequency
%QW7	WORD	0			Target Position or frequency