DF20 Series
IO module

User Manual

DF20 series —IO Module

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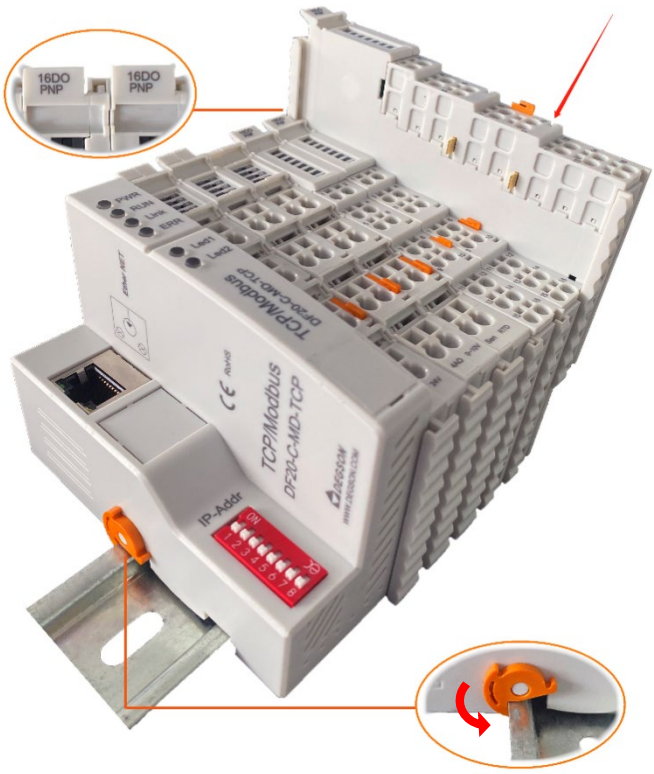
One.Installation and Removal

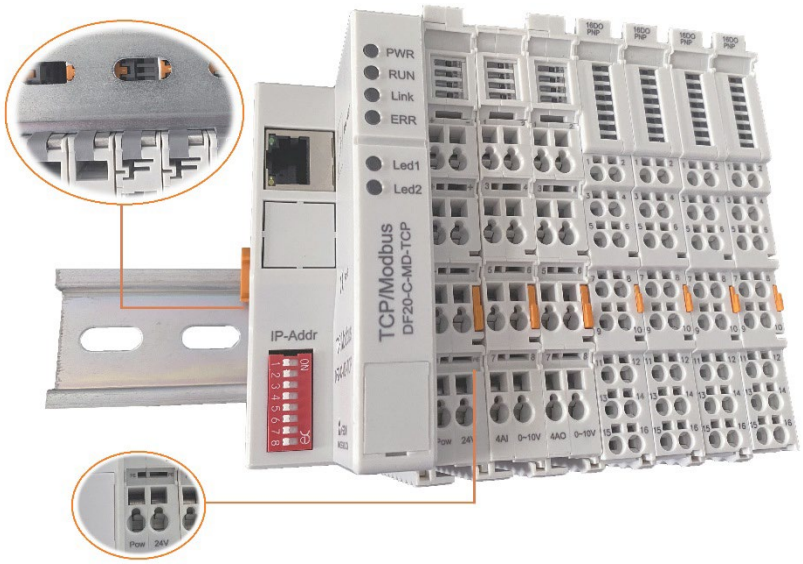
1.Installation

- Modules installed at the bottom of the DIN rail lock can be installed on the 35 mm DIN rail safely and reliably, it needs to be modules installed on the gaps, the module along the direction of arrow to DIN card pin, place the module on the DIN rail.
- In addition to install the adapter, the left have a manual card buckle for locking guide rail.



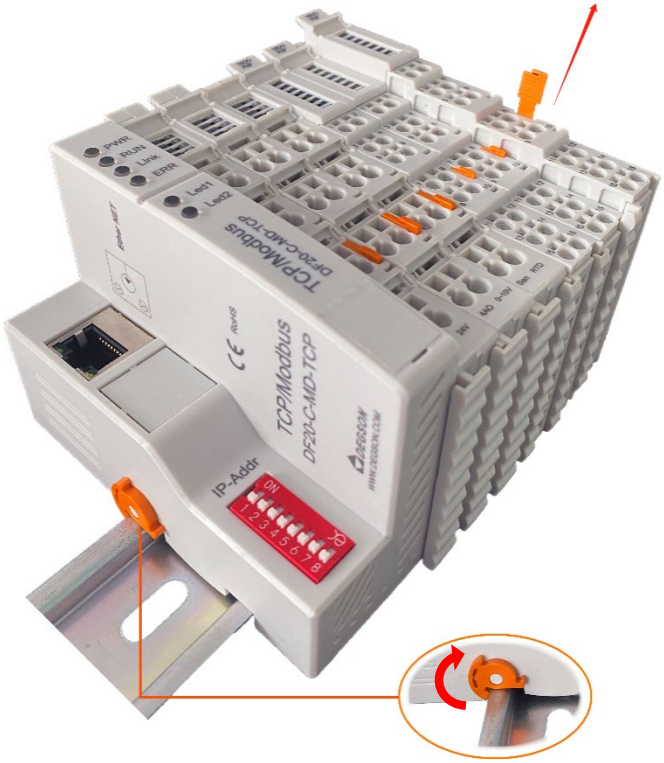
2. Ground Protection

- There is a metal shrapnel on the back of the module, which is used for effective grounding with the guide rail. The metal shrapnel is connected with the grounding PE inside the adapter module.



3.Removal

- Module is disassembled should first remove the modules all signal cables or power cable, then the direction of arrow card pin (below yellow parts), when removing the adapter module, counterclockwise to open the guide rail lock is needed.



4.Notes

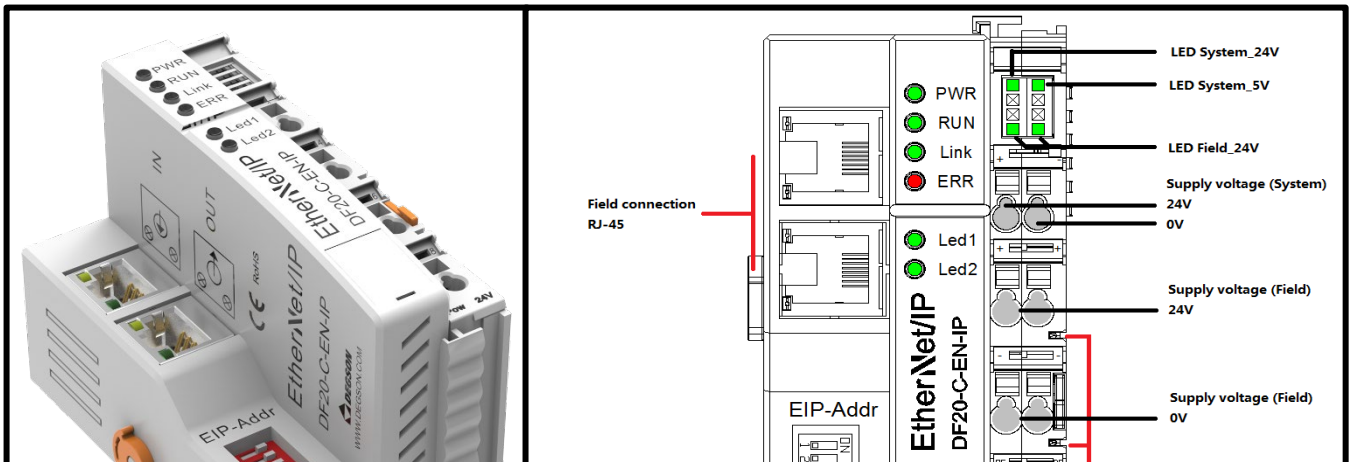
- If a module is difficult to install, do not use brute force to install it, otherwise the current module or other modules may be damaged. Remove the module from the guide rail, check whether the module is abnormal (for example, blocked by foreign bodies), and then insert and remove the module.

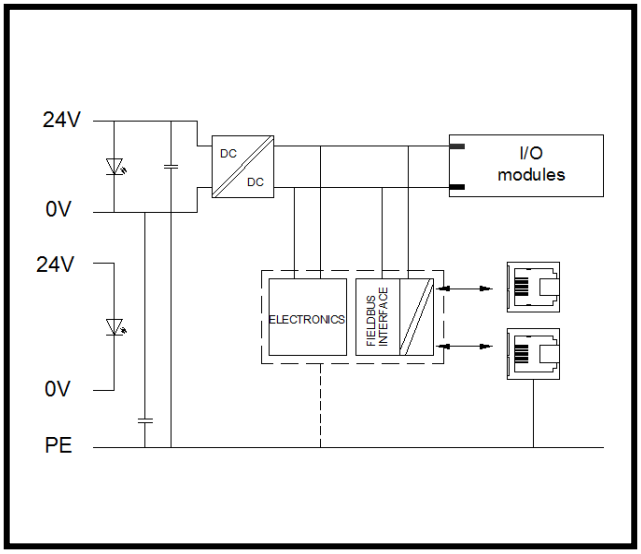
Two.Field Bus Adapter

Bus Protocol	Description	Model	Page
PROFINET	PROFINET，2*RJ45， expandable 32 modules，24VDC	DF20-C-PN-RT-V1	错误! 未定义书签。
EtherCAT Conformance tested	EtherCAT，2*RJ45， expandable 31 modules，24VDC	DF20-C-EC	错误! 未定义书签。
ModbusTCP	Modbus TCP，1*RJ45， expandable 16 modules，24VDC	DF20-C-MD-TCP	错误! 未定义书签。
	Modbus TCP，2*RJ45， expandable 32 modules，24VDC	DF20-C-MD-TCP-V1	错误! 未定义书签。
EtherNet/IP	EtherNET IP，2*RJ45， expandable 32 modules，24VDC	DF20-C-EN-IP	38

◆ EtherNET IP FieldBus Adapter (DF20-C-EN-IP)

- DF20-C-EN-IP the fieldbus adapter from standing and EtherNET IP are linked together, EtherNET IP is an open industrial Ethernet standard in the field of automation.It automatically configures and generates local process images including analog, digital, and special functional modules. Analog module and special function module (word-by-word data transfer), digital module (bit-by-bit data transfer).
- The fieldbus coupler is integrated into the application as a EtherNET IP device.
- The coupler features an integrated 2-port switch, allowing easy line structure creation without additional network components.





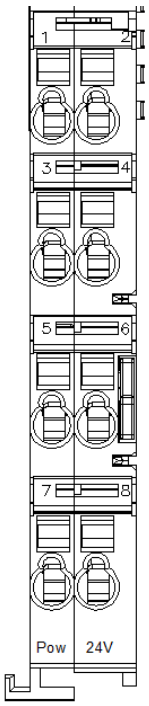
1.Specification

Technical data	
Communication	EtherNET IP
Bus segment length (max.)	100M
Transmission medium	Twisted Pair S-UTP; 100 Ω; Cat. 5
Transmission rate	10/100Mbps, full duplex
Number of extensible modules	32
Address mapping	Yes
PDO DATA	1024 bytes
Address setting	EtherNET IP specification, DIP switch
Connection type	via pluggable connector (Spring terminal blocks)
Working voltage	24VDC（-15%～+20%）
Current without load	<350mA
Supply system voltage	5VDC
Supply system current	2000mA
Supply field voltage	24V～32VDC；via power jumper contacts
Supply field current(max.)	5A
Isolation	500Vsystem/field Electrical isolation
Connection data	
Connection technology: communication/fieldbus	EtherNET IP: 2 x RJ-45
Connection technology: system supply	2 x via pluggable connector
Connection technology: field supply	6 x via pluggable connector
Connection type 1	System/field supply
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL

Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

2.Hardware Interface

- **Wiring Terminal**

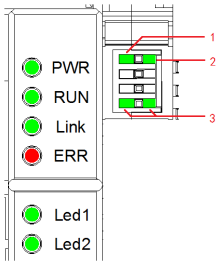


NO.	Definition	Description
1	System power 24V	Power the module. Give Goldfinger 5V.
2	System power 0V	
3	Field power 24V	Power the load.
4		

5	Field power 0V	
6		
7	PE	Protect Earthing
8		

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

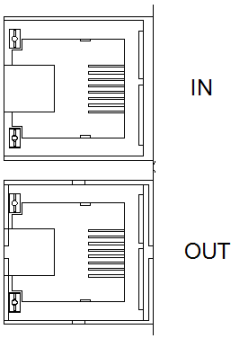
- **LED Indicator**



Indicator	Status	Description
PWR	Green: ON	Power Normal
	Green: OFF	Power Failure
RUN	Green: ON	I/O system is running
	Green: OFF	I/O system is stopping
Link	Green: Flash	Module to establish communication, there is data transmission
	Green: OFF	Module communication is not established
ERR	Red: ON	data exchanging failure
	Red: OFF	data exchanging normal
Led1	Green: ON	Port 1 connected successfully.
	Green: Flash	Port 1 has data communication.
Led2	Green: ON	Port 2 connected successfully.
	Green: Flash	Port 2 has data communication.
1	Green: ON	System Power Normal
	Green: OFF	System Power Failure
2	Green: ON	Goldfinger Power Normal
	Green: OFF	Goldfinger Power Failure

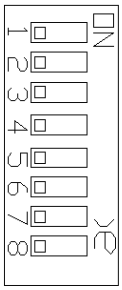
3	Green: ON	Field Power Normal
	Green: OFF	Field Power Failure

- **RJ45 Interface**



Used to establish communication with the upper computer.The coupler features an integrated 2-port switch, allowing easy line structure creation without additional network components.

- **DIP switch**

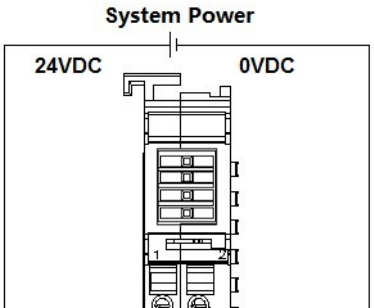


OFF		ON
0	–	1
0	–	2
0	–	4
0	–	8
0	–	16
0	–	32
0	–	64
0	–	128

The DIP switch is used to set the adapter module address. It is set by an 8-bit hardware DIP switch. Each EtherNET IP adapter has a unique station address .

- **Wiring**

Notes ： Only the right side of the adapter is captured here because of the aesthetics.



- **Configuration Interface**

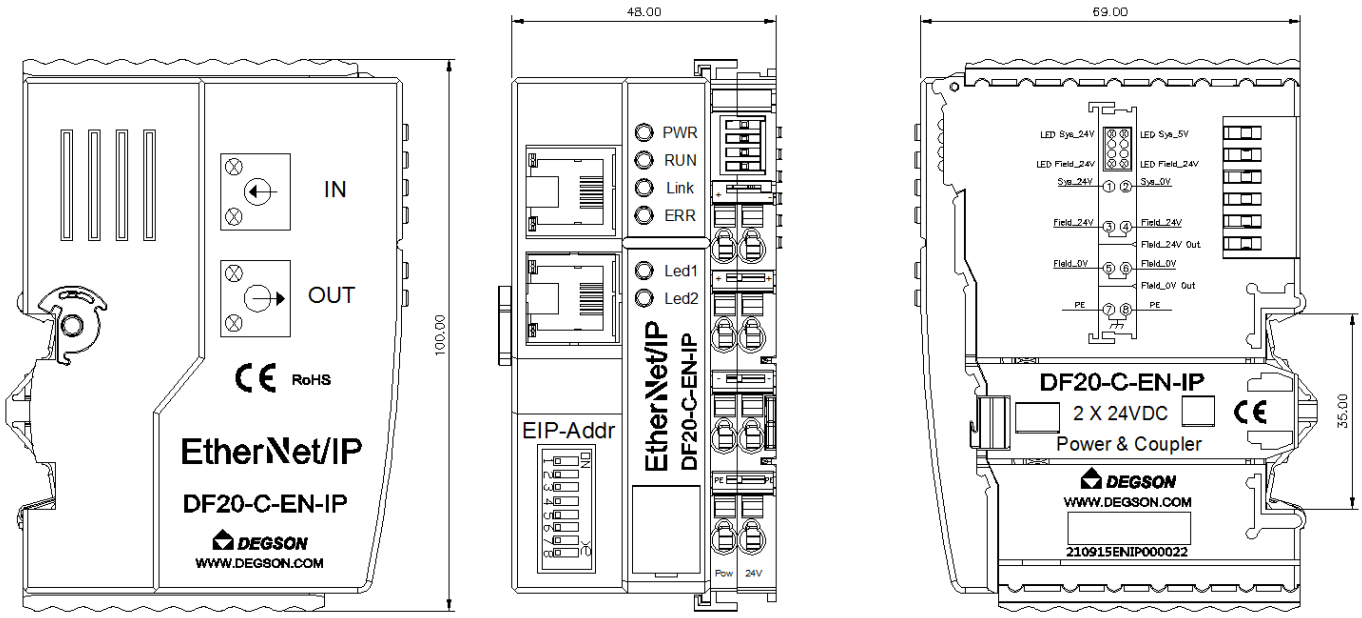
Set the configuration interface to facilitate the adapter program upgrade.

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

3.Machinery installation

- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



Three.Extended IO module

Type	Description	Model	Page
Digital module	Digital input, 8 channel, PNP, 24VDC	DF20-M-8DI-P	46
Digital module	Digital input, 8 channel, NPN, 24VDC	DF20-M-8DI-N	51
Digital module	Digital input, 16 channel, PNP, 24VDC	DF20-M-16DI-P	56
Digital module	Digital input, 16 channel, NPN, 24VDC	DF20-M-16DI-N	61
Digital module	Digital input, 32 channel, PNP, 24VDC	DF20-M-32DI-P	66
Digital module	Digital input, 32 channel, NPN, 24VDC	DF20-M-32DI-N	72
Digital module	Digital output, 8 channel, PNP, 24VDC	DF20-M-8DO-P	78
Digital module	Digital output, 8 channel, NPN, 24VDC	DF20-M-8DO-N	83
Digital module	Digital output, 16 channel, PNP, 24VDC	DF20-M-16DO-P	88
Digital module	Digital output, 16 channel, NPN, 24VDC	DF20-M-16DO-N	93
Digital module	Digital output, 32 channel, PNP, 24VDC	DF20-M-32DO-P	98
Digital module	Digital output, 32 channel, NPN, 24VDC	DF20-M-32DO-N	103
Analog module	Analog input,4 channel,voltage type, -10V～10V	DF20-M-4AI-U-0	109
Analog module	Analog input,4 channel,voltage type, 0V～10V	DF20-M-4AI-U-1	115
Analog module	Analog input,4 channel,voltage type,±10V/0～10V	DF20-M-4AI-U-4	121
Analog module	Analog input,8 channel,voltage type,±10V/0～10V	DF20-M-8AI-U-4	127
Analog module	Analog input,4 channel,current type, 0～20mA	DF20-M-4AI-I-2	134
Analog module	Analog input,4 channel,current type, 4～20mA	DF20-M-4AI-I-3	140
Analog module	Analog input,4 channel,current type, 0～20mA /4～20mA	DF20-M-4AI-I-5	146
Analog module	Analog input,8 channel,current type, 0～20mA /4～20mA	DF20-M-8AI-I-5	152
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Analog module	Analog output,4 channel,voltage type, 0V～10V	DF20-M-4AO-U-1	164
Analog module	Analog output,4 channel,voltage type, ±10V/0～10V	DF20-M-4AO-U-4	170
Analog module	Analog output,4 channel,current type, 0～20mA	DF20-M-4AO-I-2	176
Analog module	Analog output,4 channel,current type, 4～20mA	DF20-M-4AO-I-3	182
Analog module	Analog output,4 channel,current type, 0～20mA /4～20mA	DF20-M-4AO-I-5	188
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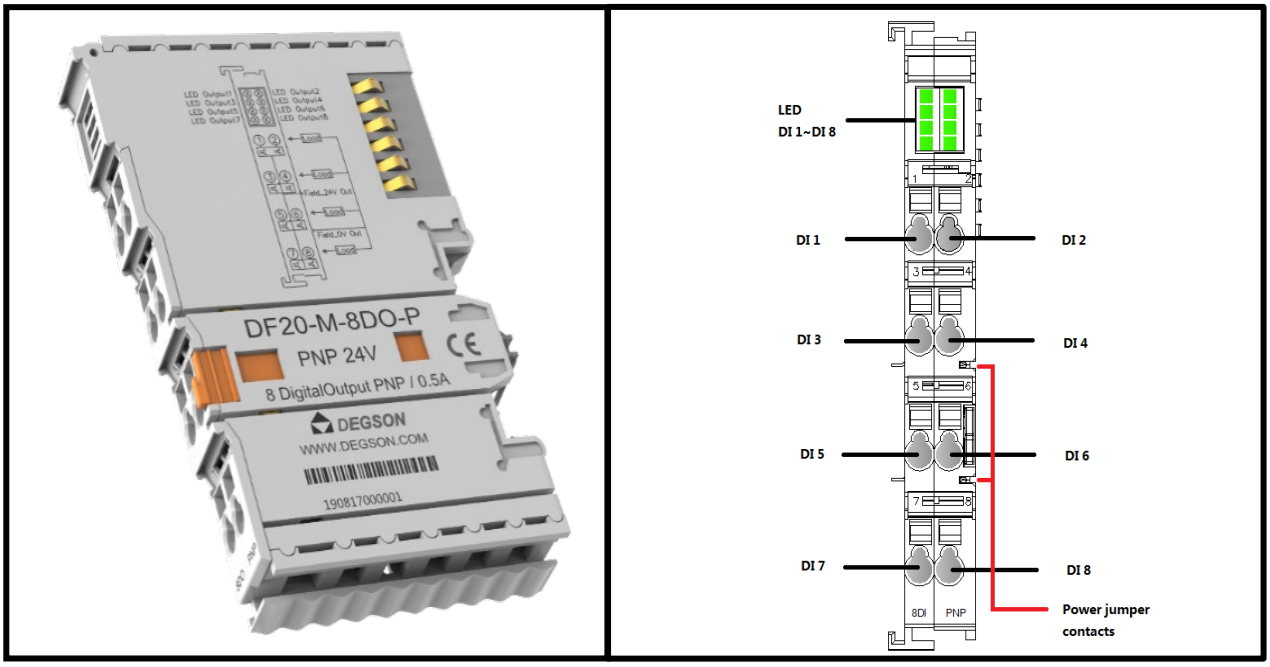
Temperature module	(RTD) measurement, 2 channel, PT100/PT1000	DF20-M-2RTD-PT	199

Temperature module	(RTD) measurement, 4 channel, PT100/PT1000	DF20-M-4RTD-PT	107
Temperature module	Thermocouple (TC), 4 channel, K/E/T/J	DF20-M-4TC-KETJ	215
Temperature module	Thermocouple (TC), 8 channel, K/E/T/J	DF20-M-8TC-KETJ	223
Analog input module	Encoder input, position latch，1 channel, 24VDC	DF20-M-1CNT-EL-4	233
Analog input module	Encoder input, position latch,1 channel, 5VDC	DF20-M-1CNT-EL-5	240
Analog input module	Encoder input, position latch, Pulse output，	DF20-M-1CNT-ELP-5	247
Analog input module	Pulse counting, Pulse latch，2 channel, 24VDC	DF20-M-2CNT-PIL-4	254
Analog input module	Pulse counting, Pulse latch，2 channel, 5VDC	DF20-M-2CNT-PIL-5	262
Voltage distribution module	Voltage distribution, 24VDC to 5VDC, Isolated	DF20-M-DC-U-5	270
Voltage distribution module	Voltage distribution, 24VDC to 5VDC, non-Isolated	DF20-M-DC-UD-5	275
Voltage distribution module	Voltage distribution, 16 channel 24VDC	DF20-M-DC-U-24	280
Voltage distribution module	Voltage distribution, 16 channel 0VDC	DF20-M-DC-U-0	284
Extendsion module	8channel, 2 line	DF20-M-T-8L	288

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

- It receives control signals from digital field devices (e.g., sensors).
- 8-channel digital input, active PNP high level.
- Each input module has a noise-rejection filter.
- Each input module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

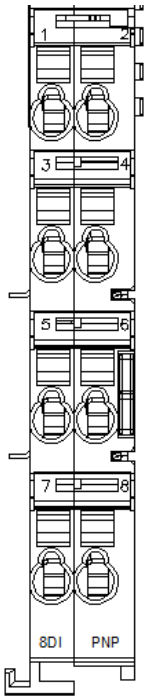


1.Specification

Technical data	
Number of digital inputs	8
Number of Channels	8
Signal type	Voltage
Signal type (voltage)	24VDC PNP
Connection type	1-line
Input characteristic	High-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	0～4V
Voltage range for signal (1)	18～32V
Data size	8 bits
Supply voltage (system)	5VDC；via data contacts
Current consumption	<14mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	8 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm2/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

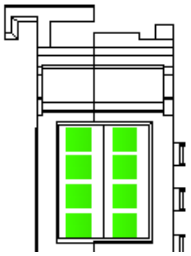
2.Hardware Interface

● Wiring Terminal



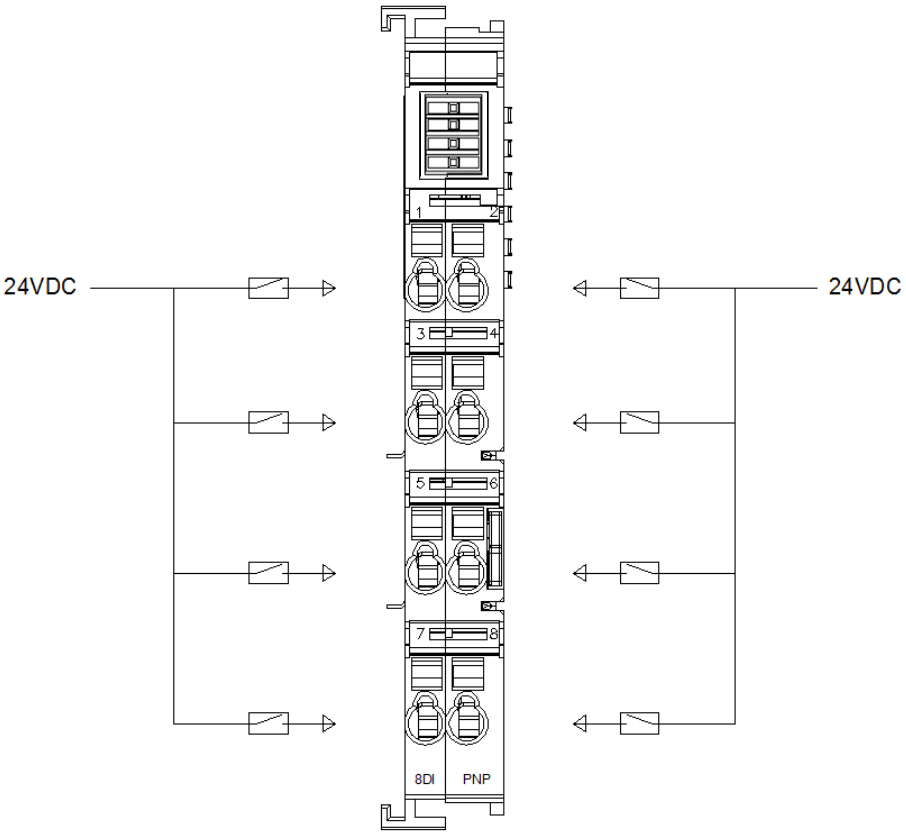
No.	Signal	Description
1	DI 1	High level signal input
2	DI 2	
3	DI 3	
4	DI 4	
5	DI 5	
6	DI 6	
7	DI 7	
8	DI 8	

● LED Indicator



1～8 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

Wiring



3.Process data definition

DF20-M-8DI-P Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel 8	DI Channel 7	DI Channel 6	DI Channel 5	DI Channel 4	DI Channel 3	DI Channel 2	DI Channel 1

Data description:

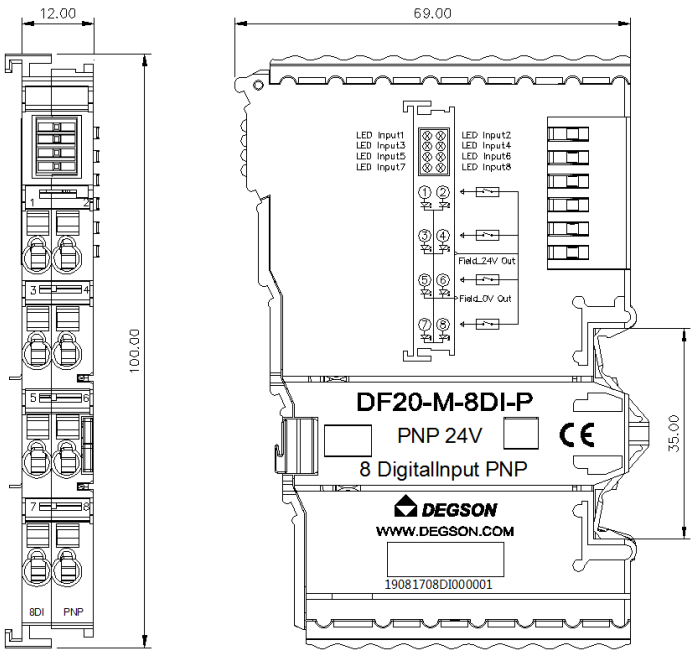
DI Channel （1~8）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

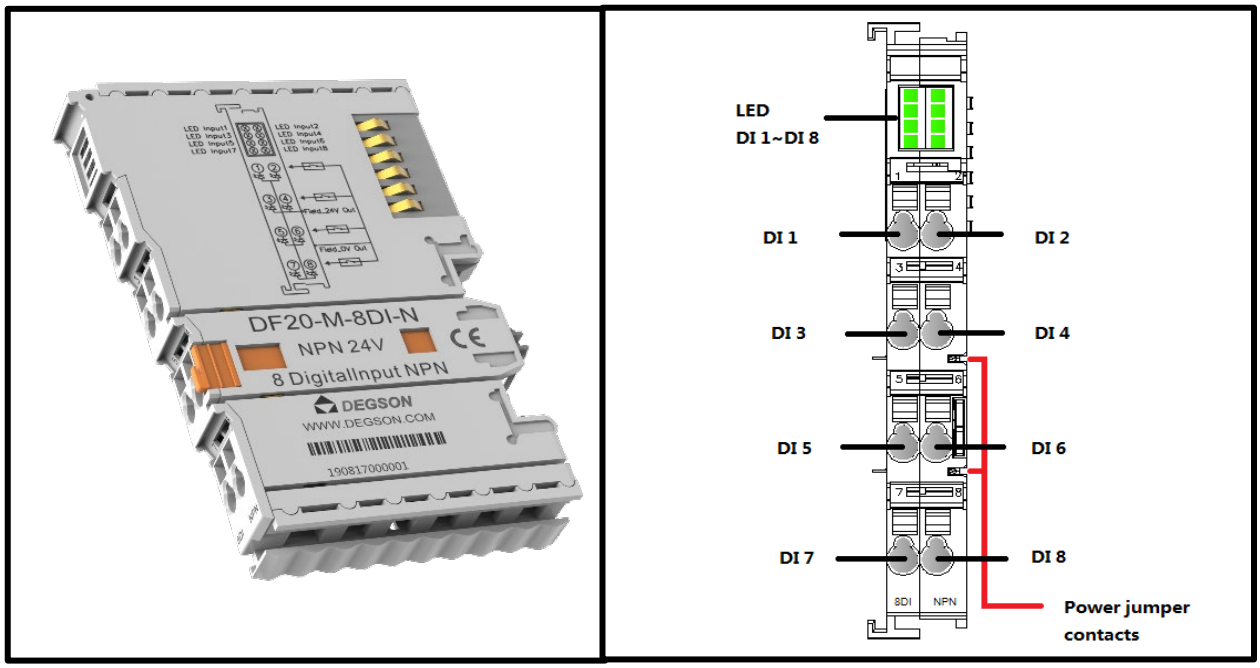
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- It receives control signals from digital field devices (e.g., sensors).
- 8-channel digital input, active NPN low level.
- Each input module has a noise-rejection filter.
- Each input module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

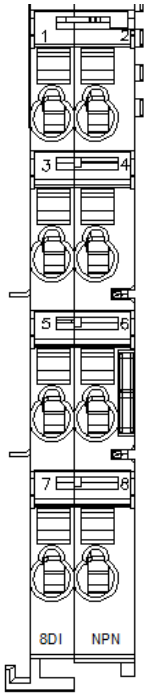


1.Specification

Technical data	
Number of digital inputs	8
Number of Channels	8
Signal type	Voltage
Signal type (voltage)	24VDC NPN
Connection type	1-line
Input characteristic	Low-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	18～32V
Voltage range for signal (1)	0～4V
Data size	8 bits
Supply voltage (system)	5VDC；via data contacts
Current consumption	<14mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	8 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

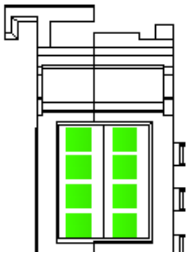
2.Hardware Interface

● Wiring Terminal



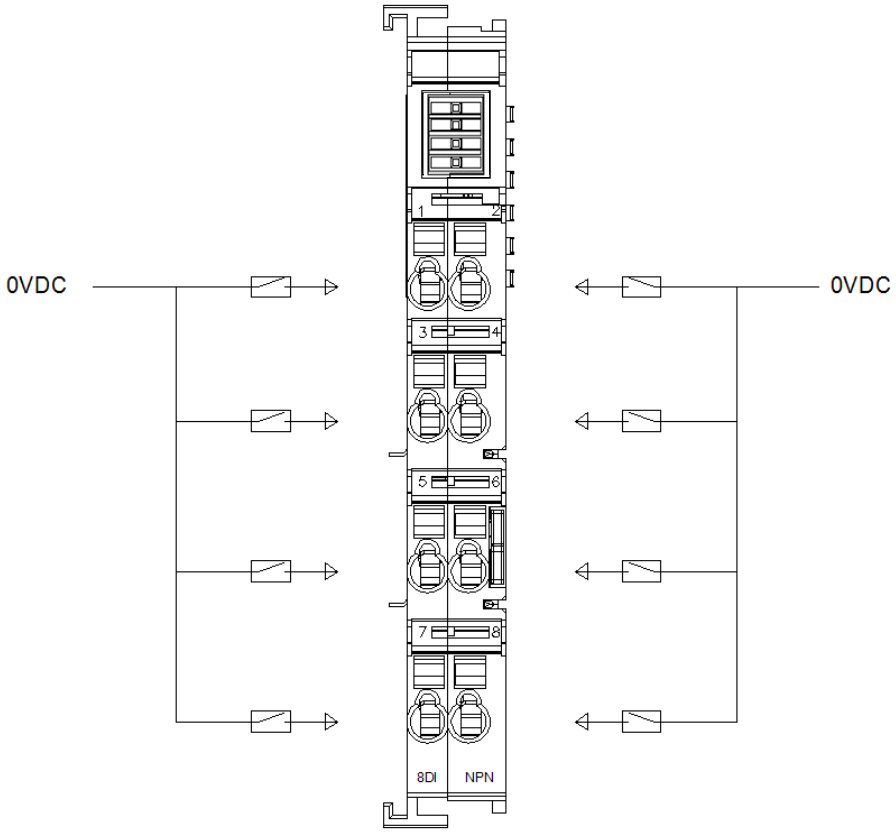
No.	Signal	Description
1	DI 1	Low level signal input
2	DI 2	
3	DI 3	
4	DI 4	
5	DI 5	
6	DI 6	
7	DI 7	
8	DI 8	

● LED Indicator



1～8 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

● Wiring



3.Process data definition

DF20-M-8DI-N Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel 8	DI Channel 7	DI Channel 6	DI Channel 5	DI Channel 4	DI Channel 3	DI Channel 2	DI Channel 1

Data description:

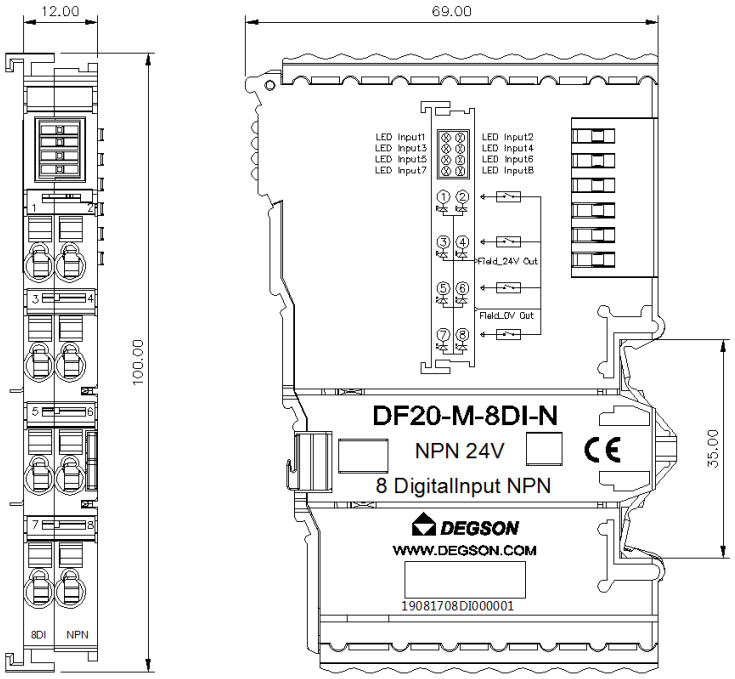
DI Channel （1~8）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

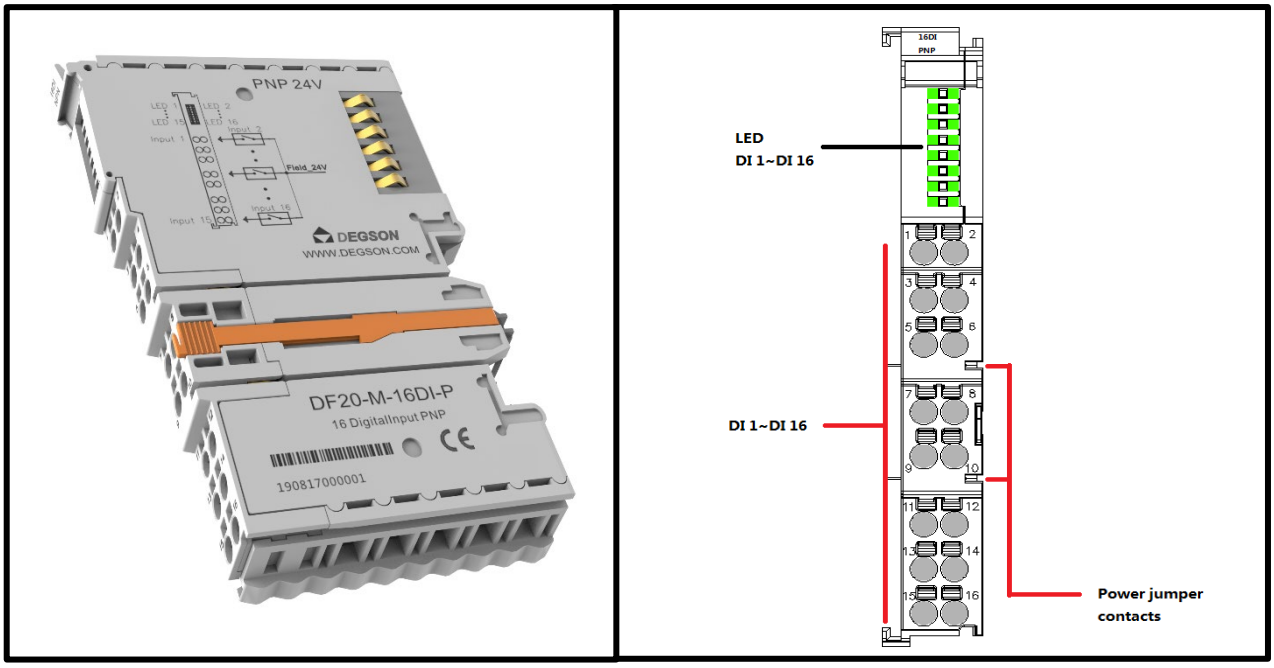
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- ➢ It receives control signals from digital field devices (e.g., sensors).
- ➢ 16-channel digital input, active PNP high level.
- ➢ Each input module has a noise-rejection filter.
- ➢ Each input module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

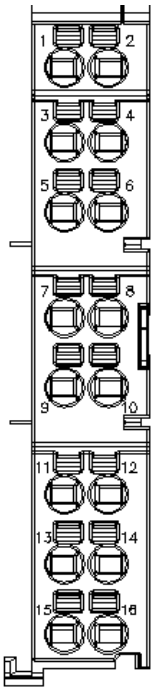


1.Specification

Technical data	
Number of digital inputs	16
Number of Channels	16
Signal type	Voltage
Signal type (voltage)	24VDC PNP
Connection type	1-line
Input characteristic	High-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	0～4V
Voltage range for signal (1)	18～32V
Data size	2 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<15mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	16 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm^2/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

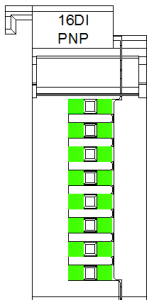
2.Hardware Interface

● Wiring Terminal



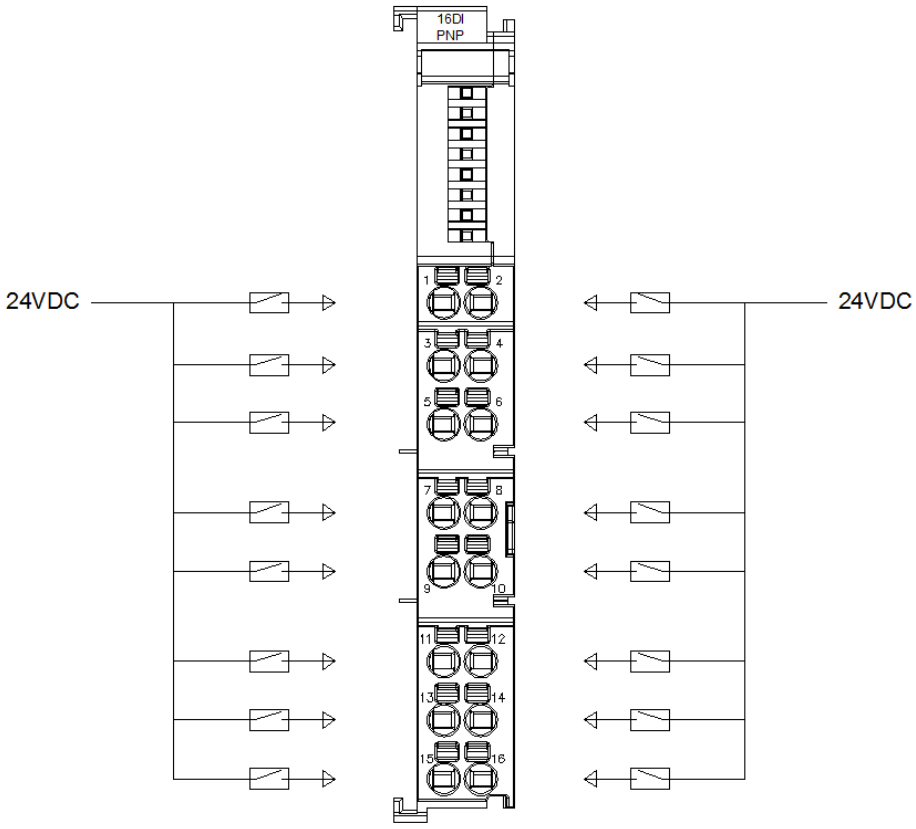
No.		Signal		Description
1	2	DI 1	DI 2	High level signal input
3	4	DI 3	DI 4	
5	6	DI 5	DI 6	
7	8	DI 7	DI 8	
9	10	DI 9	DI 10	
11	12	DI 11	DI 12	
13	14	DI 13	DI 14	
15	16	DI 15	DI 16	

● LED Indicator



1～16 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

Wiring



3.Process data definition

DF20-M-16DI-P Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel 8	DI Channel 7	DI Channel 6	DI Channel 5	DI Channel 4	DI Channel 3	DI Channel 2	DI Channel 1
Byte 1	DI Channel 16	DI Channel 15	DI Channel 14	DI Channel 13	DI Channel 12	DI Channel 11	DI Channel 10	DI Channel 9

Data description:

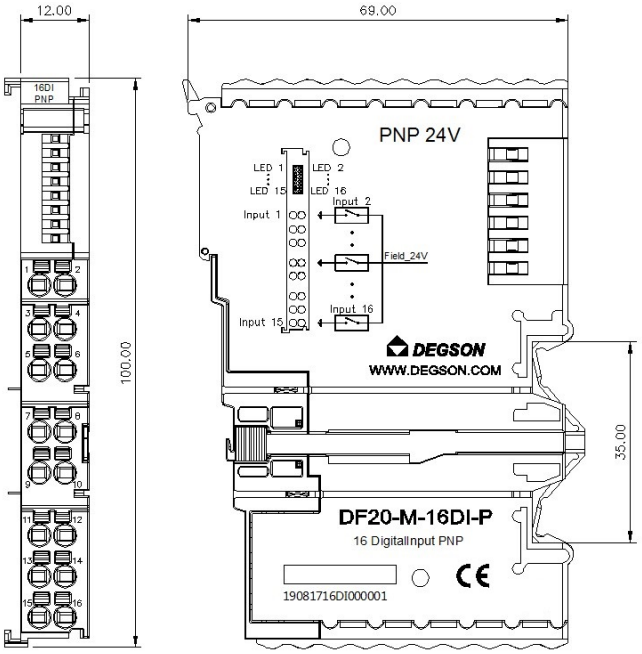
DI Channel （1~16）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

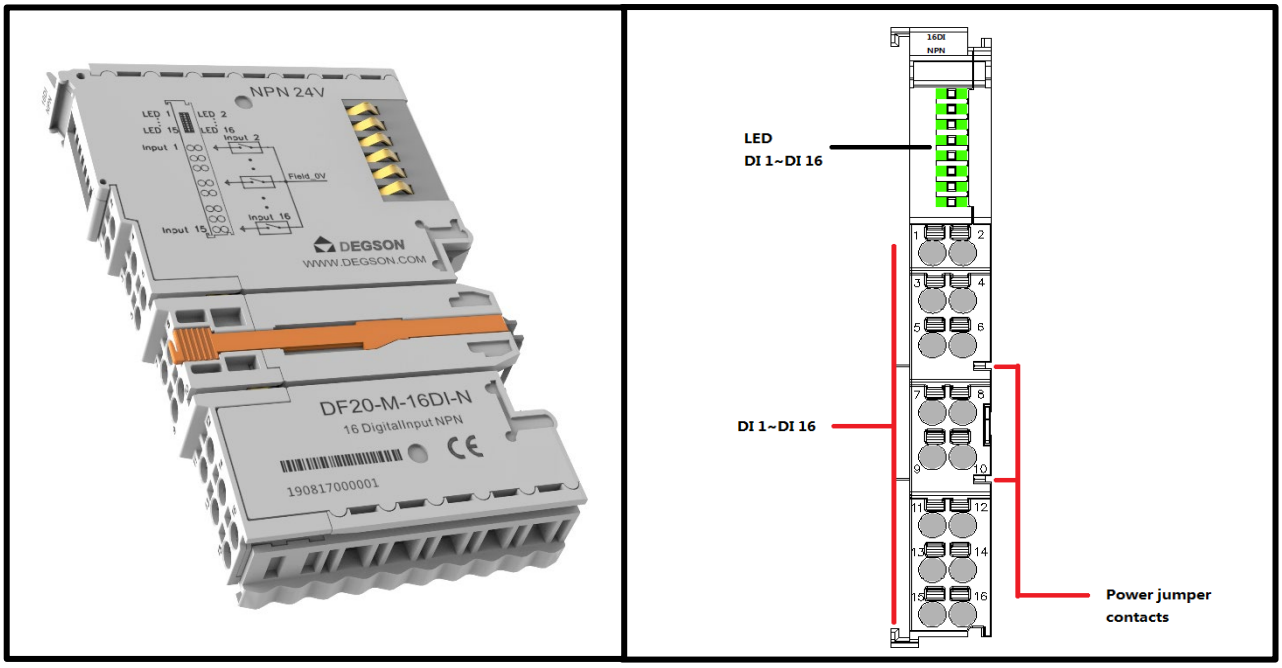
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- It receives control signals from digital field devices (e.g., sensors).
- 16-channel digital input, active NPN low level.
- Each input module has a noise-rejection filter.
- Each input module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

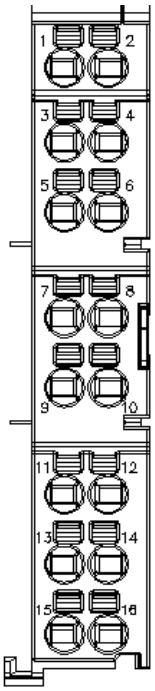


1.Specification

Technical data	
Number of digital inputs	16
Number of Channels	16
Signal type	Voltage
Signal type (voltage)	24VDC NPN
Connection type	1-line
Input characteristic	Low-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	18～32V
Voltage range for signal (1)	0～4V
Data size	2 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<15mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	16 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

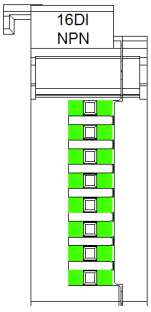
2.Hardware Interface

● Wiring Terminal



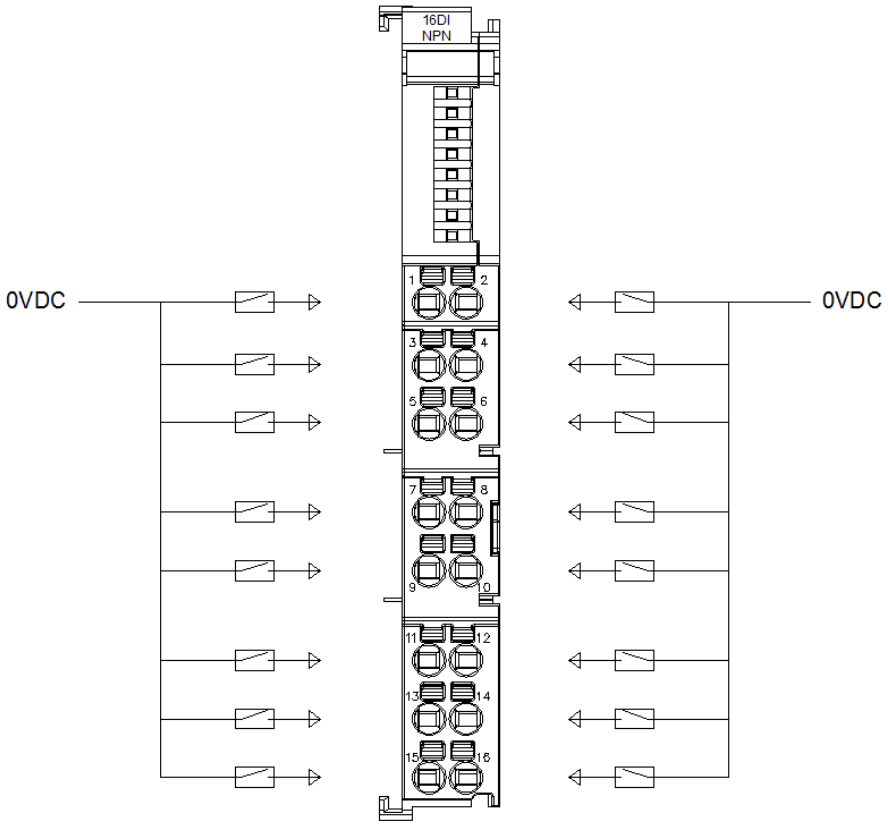
No.		Signal		Description
1	2	DI 1	DI 2	Low level signal input
3	4	DI 3	DI 4	
5	6	DI 5	DI 6	
7	8	DI 7	DI 8	
9	10	DI 9	DI 10	
11	12	DI 11	DI 12	
13	14	DI 13	DI 14	
15	16	DI 15	DI 16	

● LED Indicator



1～16 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

Wiring



3.Process data definition

DF20-M-16DI-N Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel 8	DI Channel 7	DI Channel 6	DI Channel 5	DI Channel 4	DI Channel 3	DI Channel 2	DI Channel 1
Byte 1	DI Channel 16	DI Channel 15	DI Channel 14	DI Channel 13	DI Channel 12	DI Channel 11	DI Channel 10	DI Channel 9

Data description:

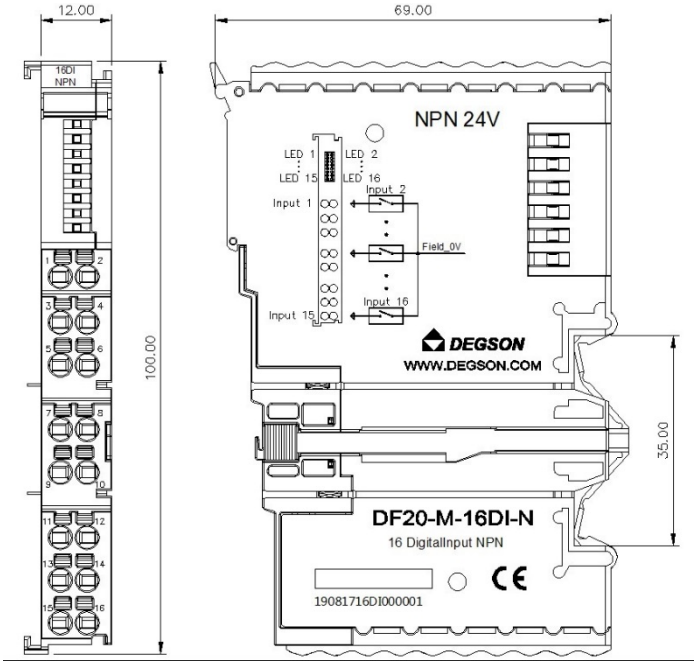
DI Channel （1~16）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

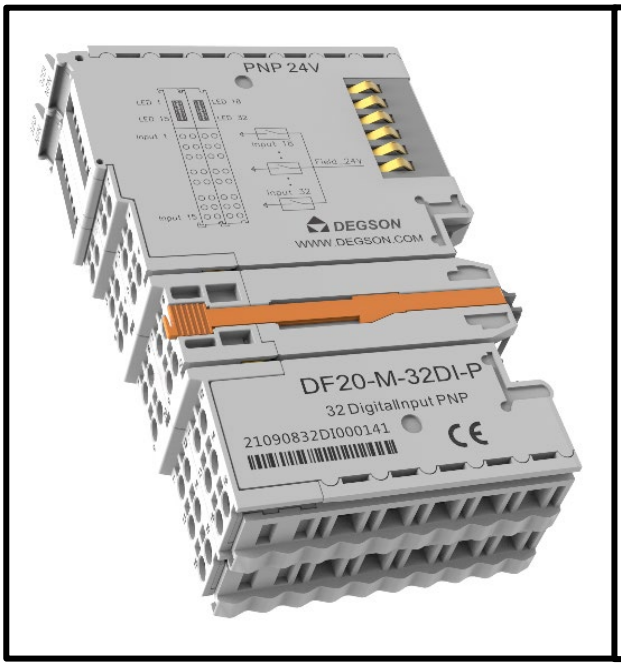
- **Dimension drawing**

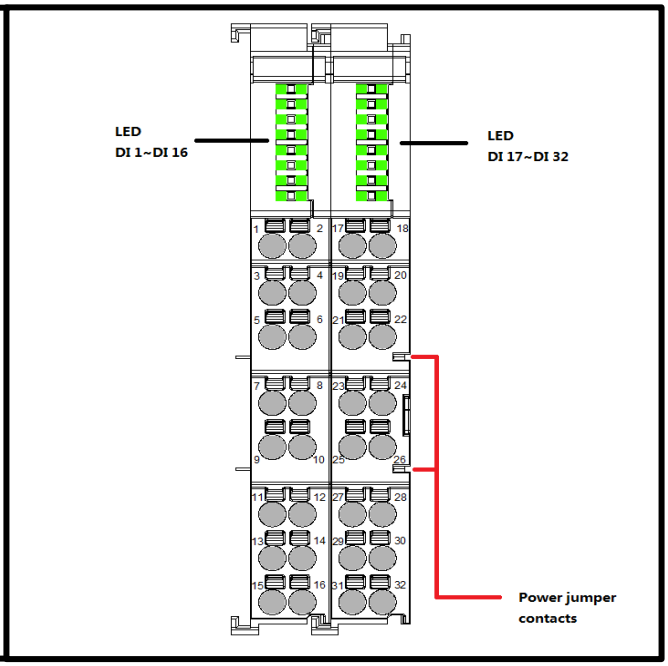
The installation size is shown in the following figure (unit: mm):



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

- It receives control signals from digital field devices (e.g., sensors).
- 32-channel digital input, active PNP high level.
- Each input module has a noise-rejection filter.
- Each input module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.



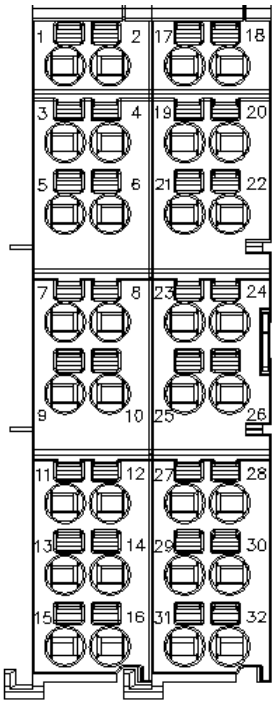


1.Specification

Technical data	
Number of digital inputs	32
Number of Channels	32
Signal type	Voltage
Signal type (voltage)	24VDC PNP
Connection type	1-line
Input characteristic	High-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	0～4V
Voltage range for signal (1)	18～32V
Data size	4 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	32 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	32 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm^2/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

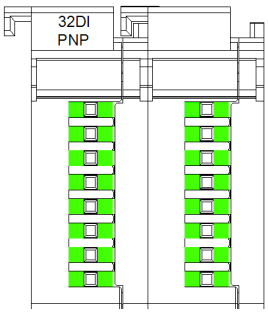
2.Hardware Interface

● Wiring Terminal



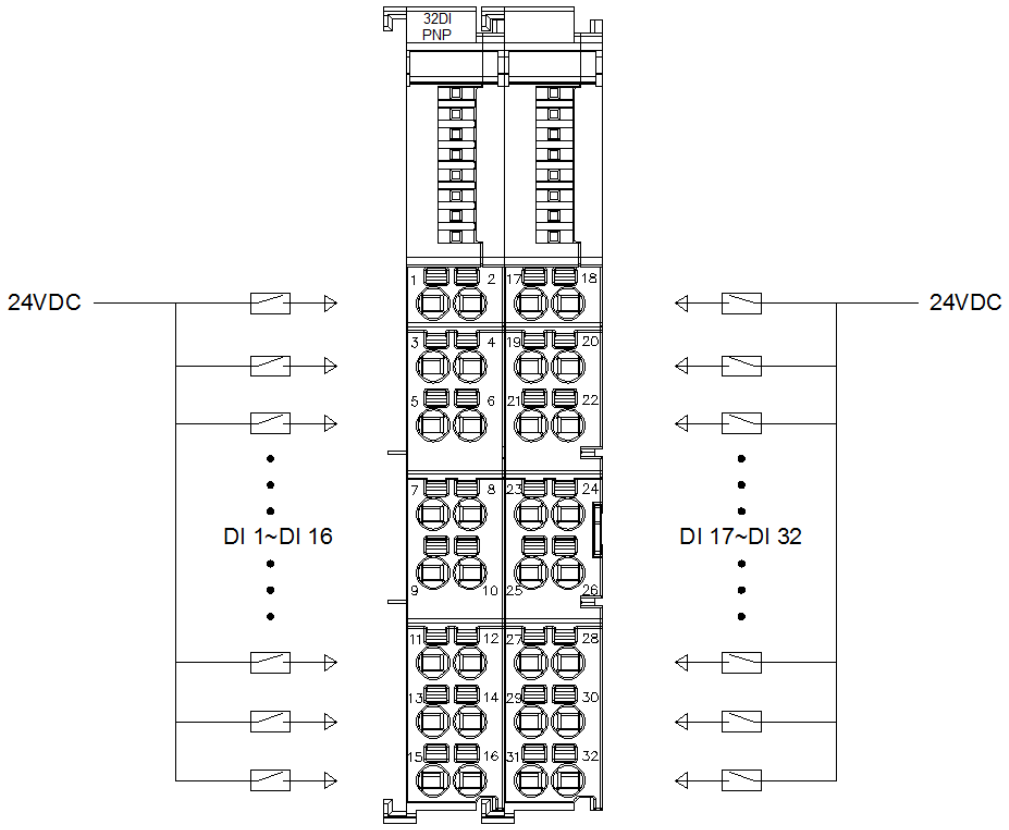
No.				Signal				Description
1	2	17	18	DI 1	DI 2	DI 17	DI 18	High level signal input
3	4	19	20	DI 3	DI 4	DI 19	DI 20	
5	6	21	22	DI 5	DI 6	DI 21	DI 22	
7	8	23	24	DI 7	DI 8	DI 23	DI 24	
9	10	25	26	DI 9	DI 10	DI 25	DI 26	
11	12	27	28	DI 11	DI 12	DI 27	DI 28	
13	14	29	30	DI 13	DI 14	DI 29	DI 30	
15	16	31	32	DI 15	DI 16	DI 31	DI 32	

● LED Indicator



1～32 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

Wiring


32DI
PNP
24VDC
DI 1~DI 16
DI 17~DI 32
24VDC
1
2
17
18
3
4
19
20
5
6
21
22
7
8
23
24
9
10
25
26
11
12
27
28
13
14
29
30
15
16
31
32

3.Process data definition

DF20-M-32DI-P Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel8	DI Channel7	DI Channel6	DI Channel 5	DI Channel4	DI Channel 3	DI Channel 2	DI Channel1
Byte 1	DI Channel 16	DI Channel 15	DI Channel 14	DI Channel 13	DI Channel 12	DI Channel 11	DI Channel 10	DI Channel 9
Byte 2	DI Channel 24	DI Channel 23	DI Channel 22	DI Channel 21	DI Channel 20	DI Channel 19	DI Channel 18	DI Channel 17
Byte 3	DI Channel 32	DI Channel 31	DI Channel 30	DI Channel 29	DI Channel 28	DI Channel 27	DI Channel 26	DI Channel 25

Data description:

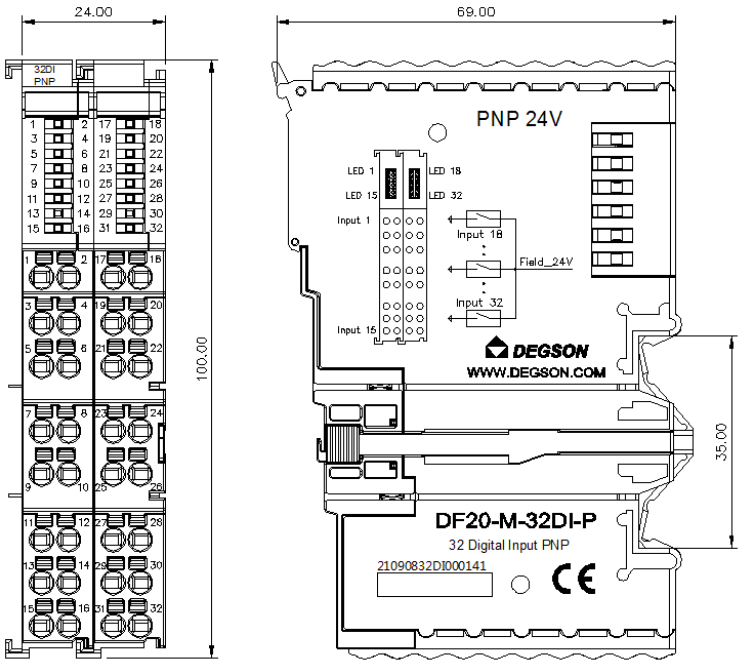
DI Channel （1~32）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

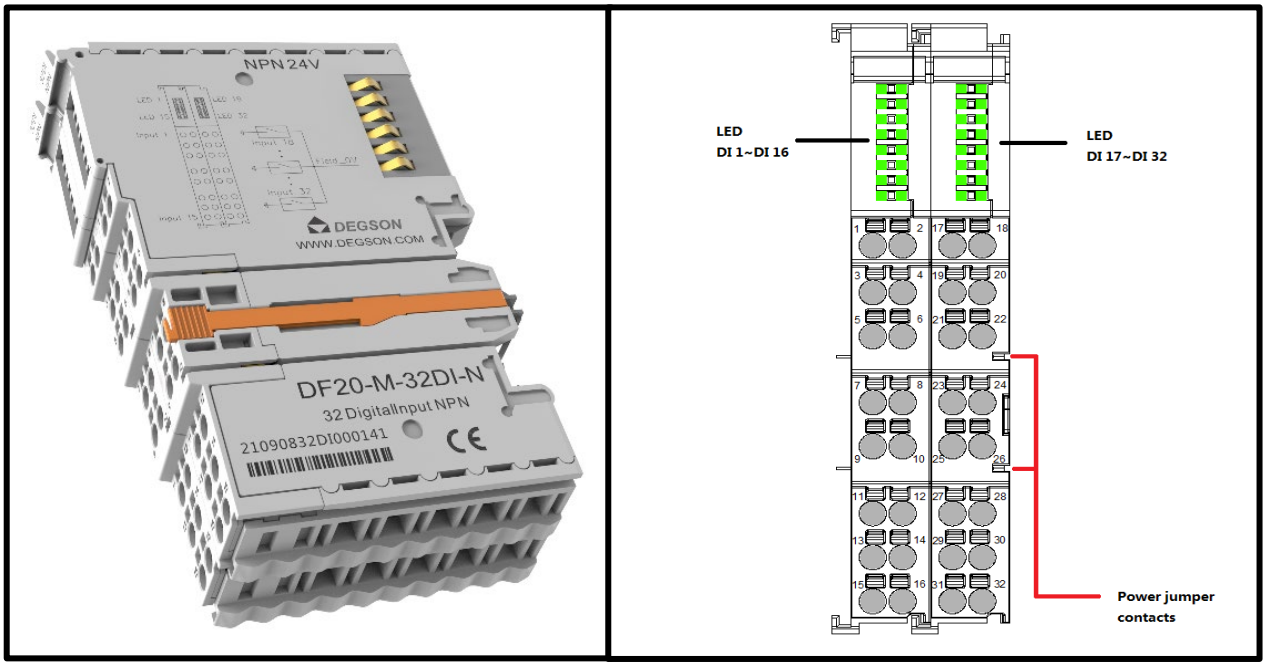
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- It receives control signals from digital field devices (e.g., sensors).
- 32-channel digital input, active NPN low level.
- Each input module has a noise-rejection filter.
- Each input module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

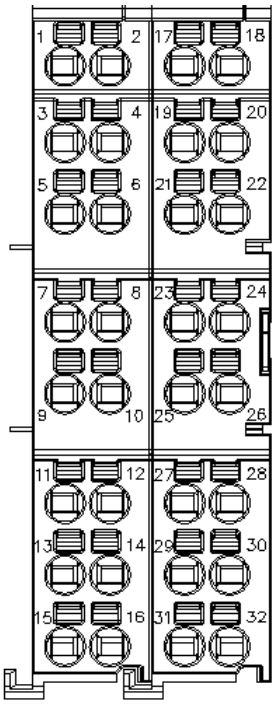


1.Specification

Technical data	
Number of digital inputs	32
Number of Channels	32
Signal type	Voltage
Signal type (voltage)	24VDC NPN
Connection type	1-line
Input characteristic	Low-side switching
Input filter (digital)	0.3ms
Precision	0.20%
Typical input current	3mA
Voltage range for signal (0)	18～32V
Voltage range for signal (1)	0～4V
Data size	4 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	32 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	32 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

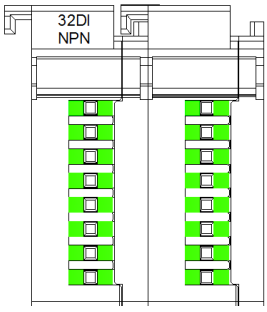
2.Hardware Interface

● Wiring Terminal



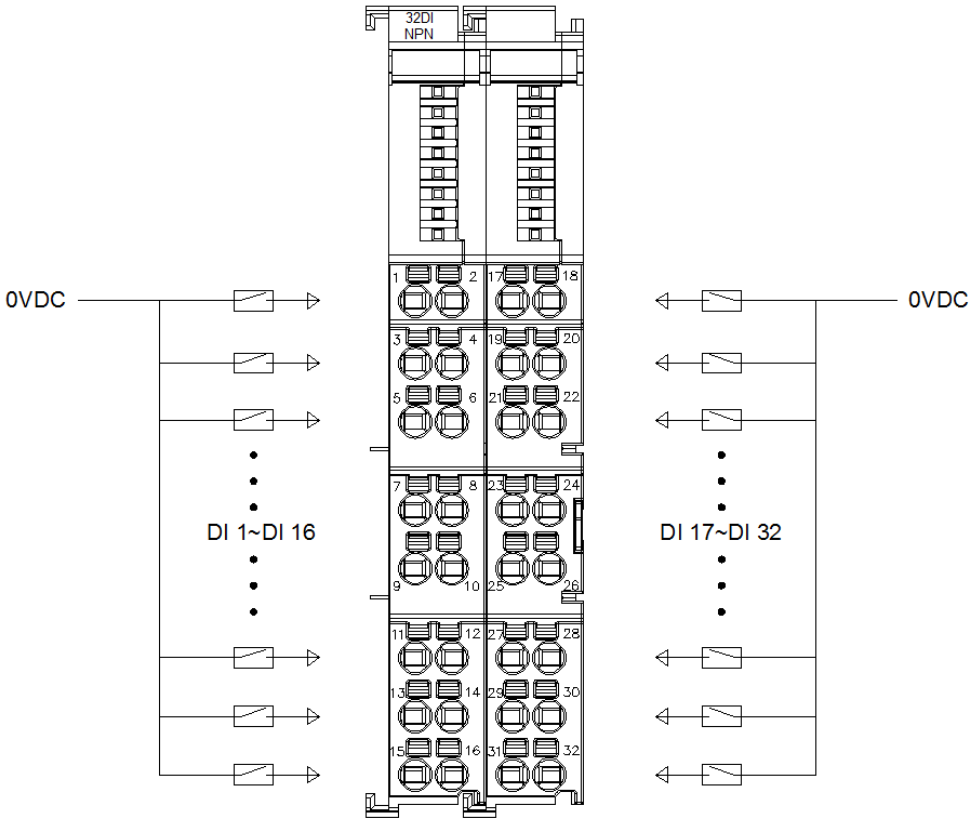
No.				Signal				Description
1	2	17	18	DI 1	DI 2	DI 17	DI 18	Low level signal input
3	4	19	20	DI 3	DI 4	DI 19	DI 20	
5	6	21	22	DI 5	DI 6	DI 21	DI 22	
7	8	23	24	DI 7	DI 8	DI 23	DI 24	
9	10	25	26	DI 9	DI 10	DI 25	DI 26	
11	12	27	28	DI 11	DI 12	DI 27	DI 28	
13	14	29	30	DI 13	DI 14	DI 29	DI 30	
15	16	31	32	DI 15	DI 16	DI 31	DI 32	

● LED Indicator



1～32 channel Indicators	Definition
ON	Input signal valid
OFF	Input signal invalid

● Wiring


32DI
NPN
0VDC
DI 1~DI 16
DI 17~DI 32
0VDC
1
2
17
18
3
4
19
20
5
6
21
22
7
8
23
24
9
10
25
26
11
12
27
28
13
14
29
30
15
16
31
32

3.Process data definition

DF20-M-32DI-N Module process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Channel8	DI Channel7	DI Channel6	DI Channel 5	DI Channel4	DI Channel 3	DI Channel 2	DI Channel1
Byte 1	DI Channel 16	DI Channel 15	DI Channel 14	DI Channel 13	DI Channel 12	DI Channel 11	DI Channel 10	DI Channel 9
Byte 2	DI Channel 24	DI Channel 23	DI Channel 22	DI Channel 21	DI Channel 20	DI Channel 19	DI Channel 18	DI Channel 17
Byte 3	DI Channel 32	DI Channel 31	DI Channel 30	DI Channel 29	DI Channel 28	DI Channel 27	DI Channel 26	DI Channel 25

Data description:

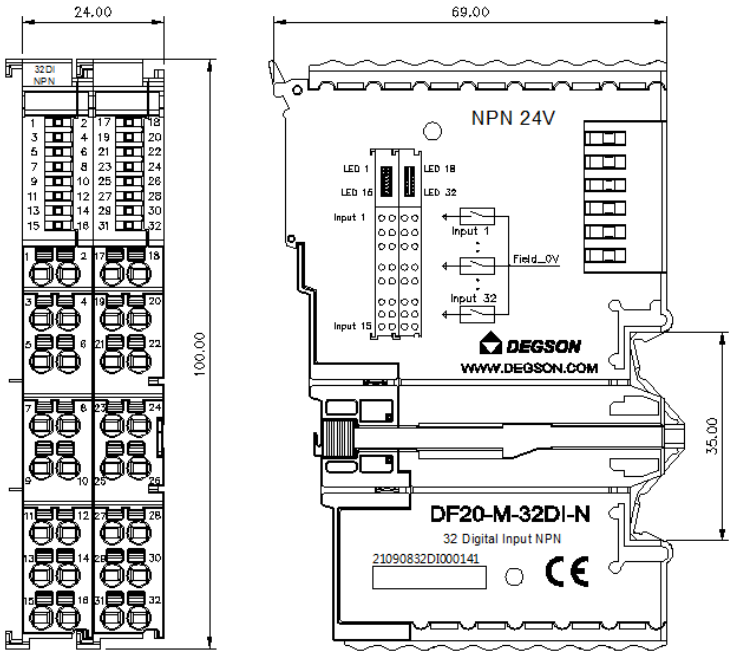
DI Channel （1~32）：When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid , it is 0.

1：Input signal valid　　0：Input signal invalid

4.Machinery installation

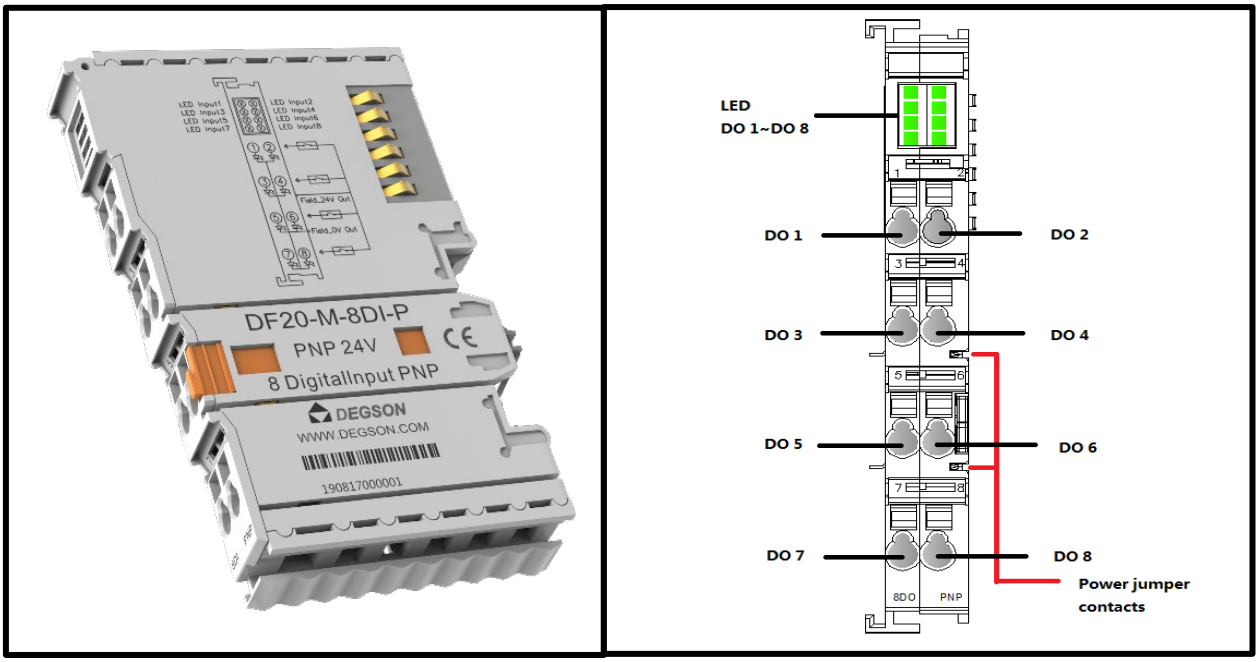
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- ➢ It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- ➢ 8-channel digital output, active PNP high level.
- ➢ Each output module has a noise-rejection filter.
- ➢ Each output module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

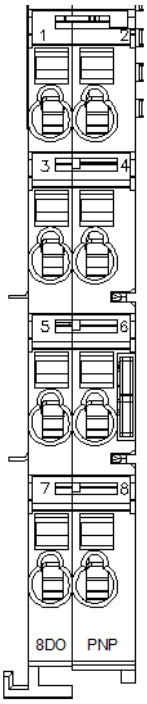


1.Specification

Technical data	
Number of digital outputs	8
Number of Channels	8
Signal type	Voltage
Signal type (voltage)	24V DC PNP
Connection type	1-line
Output characteristic	high-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	24V DC
Data size	1 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<50mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	8 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm^2/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

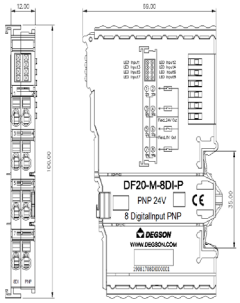
2.Hardware Interface

- **Wiring Terminal**



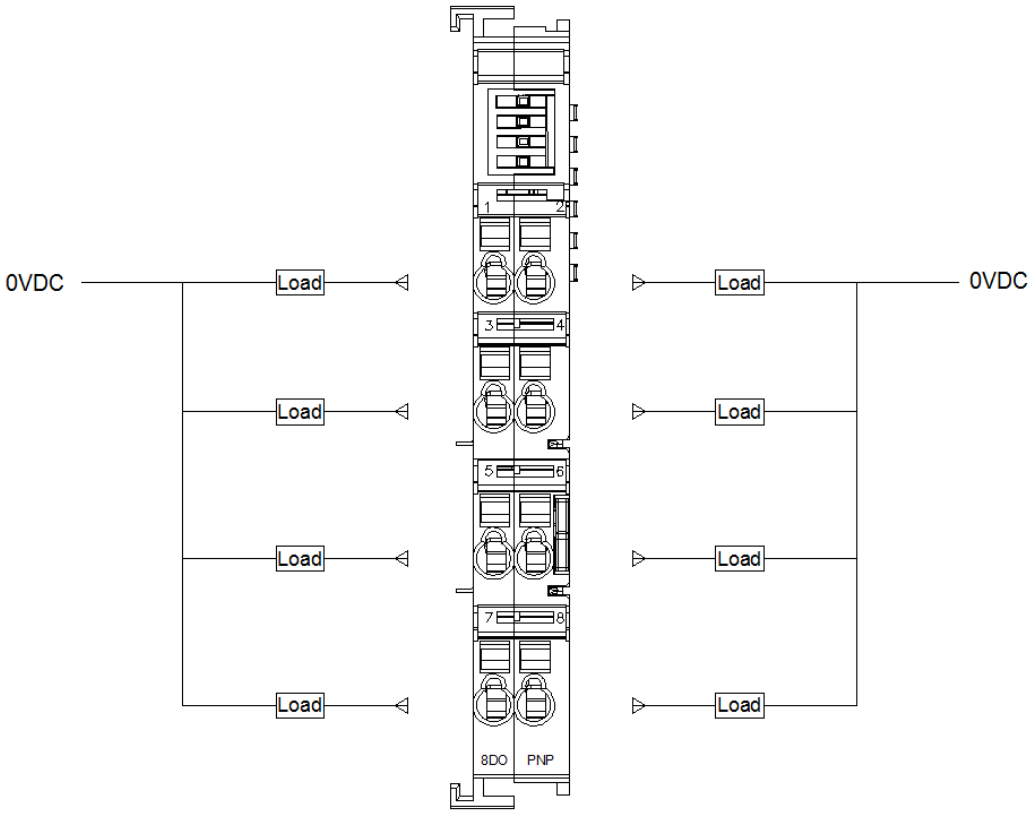
No.	Signal	Description
1	DO 1	High level signal output
2	DO 2	
3	DO 3	
4	DO 4	
5	DO 5	
6	DO 6	
7	DO 7	
8	DO 8	

- **LED Indicator**



1～8 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring


0VDC
Load
Load
Load
Load
Load
Load
Load
Load
0VDC
1
2
3
4
5
6
7
8
8DO
PNP

3.Process data definition

DF20-M-8DO-P Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1

Data description:

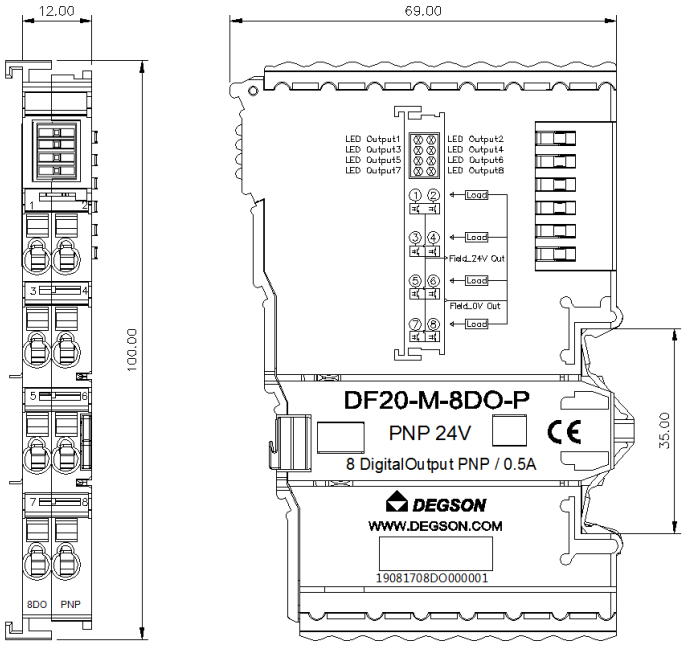
DO Channel （1~8）：When the bit is 1, the output signal of the corresponding channel is effective,the output is high level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

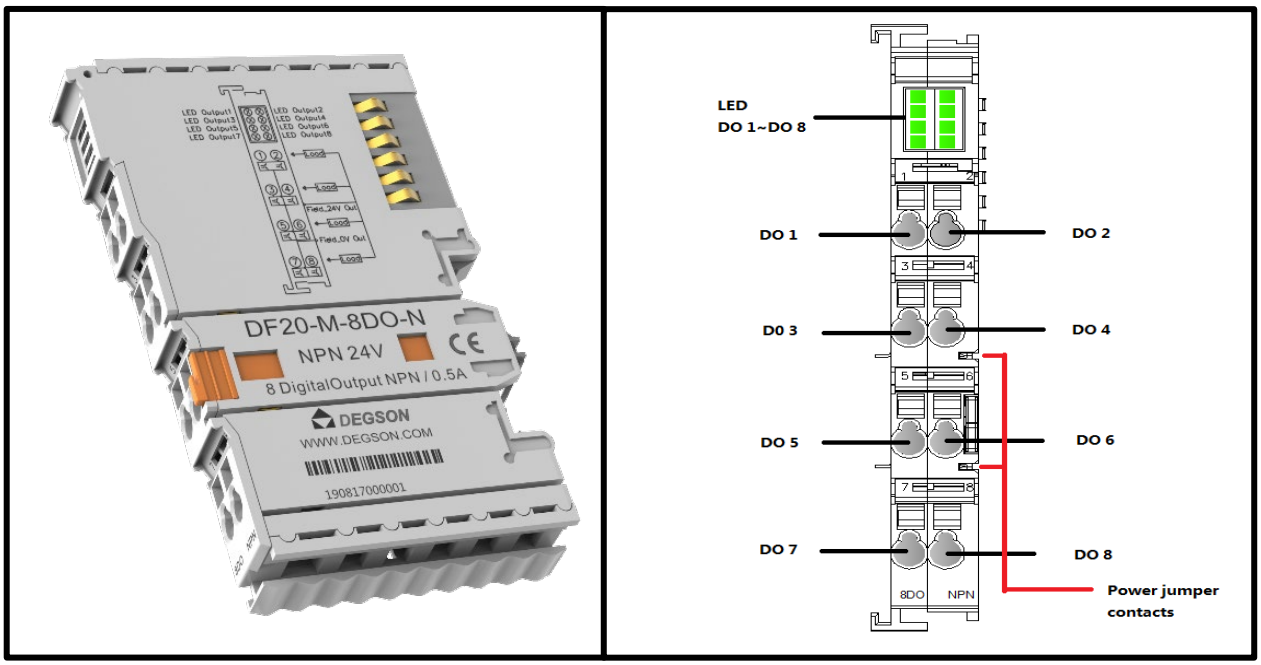
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- ➢ It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- ➢ 8-channel digital output, active NPN low level.
- ➢ Each output module has a noise-rejection filter.
- ➢ Each output module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

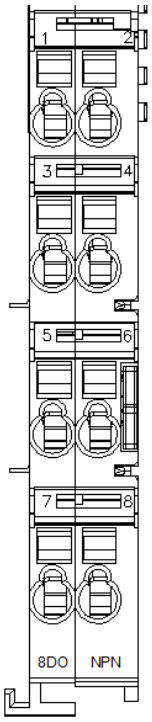


1.Specification

Technical data	
Number of digital outputs	8
Number of Channels	8
Signal type	Voltage
Signal type (voltage)	24V DC NPN
Connection type	1-line
Output characteristic	low-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	0V DC
Data size	1 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<50mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	8 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm^2/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

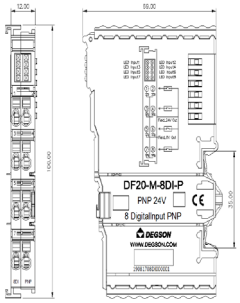
2.Hardware Interface

● Wiring Terminal



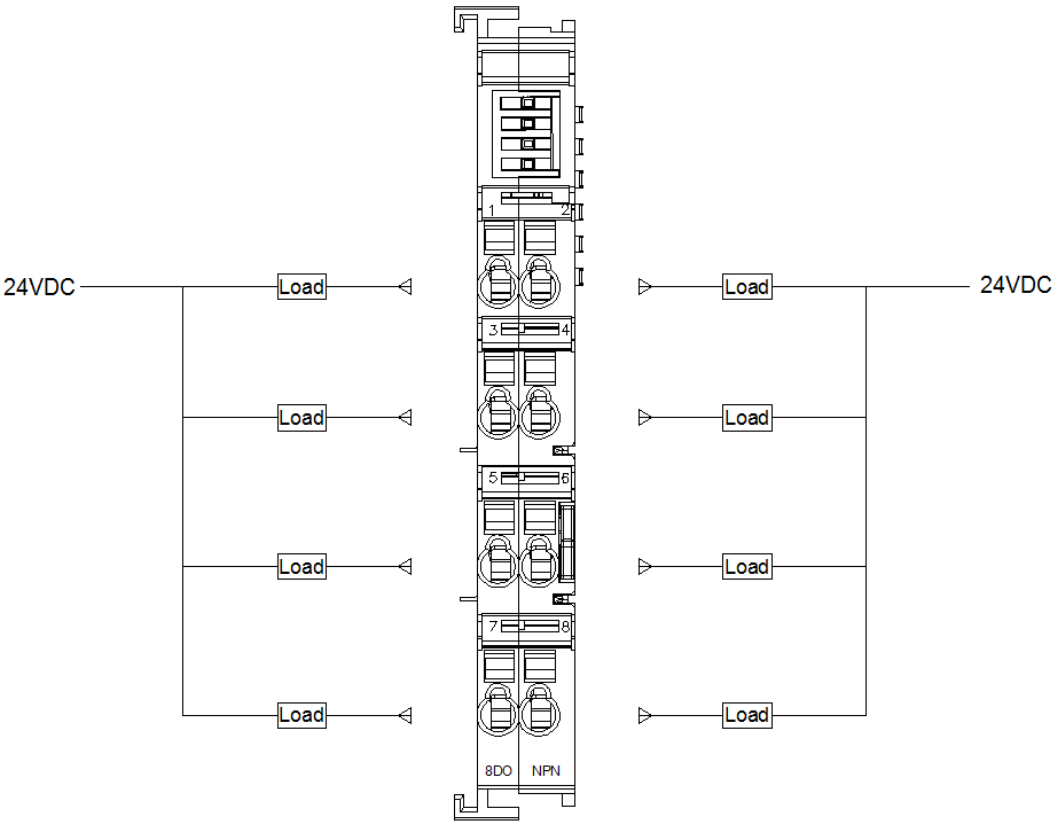
No.	Signal	Description
1	DO 1	Low level signal output
2	DO 2	
3	DO 3	
4	DO 4	
5	DO 5	
6	DO 6	
7	DO 7	
8	DO 8	

● LED Indicator



1～8 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring


24VDC
Load
Load
Load
Load
Load
Load
Load
Load
24VDC
1
2
3
4
5
6
7
8
8DO
NPN

3.Process data definition

DF20-M-8DO-N Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1

Data description:

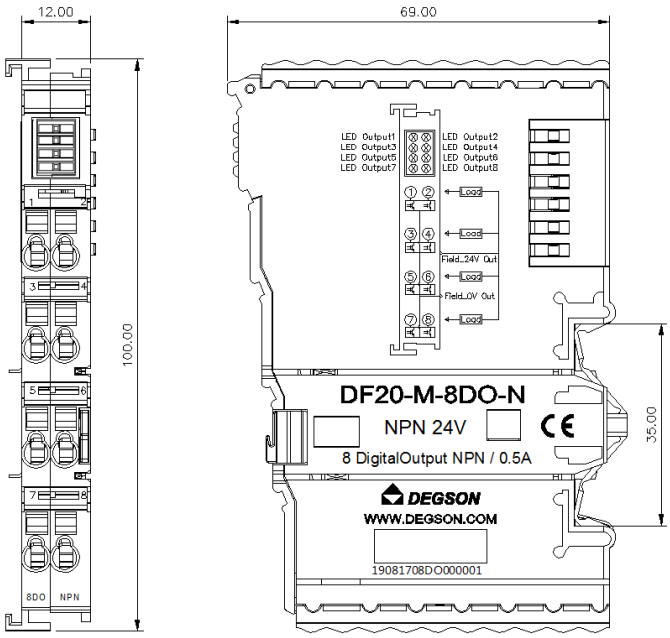
DO Channel （1~8）：When the bit is 1, the output signal of the corresponding channel is effective,the output is low level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

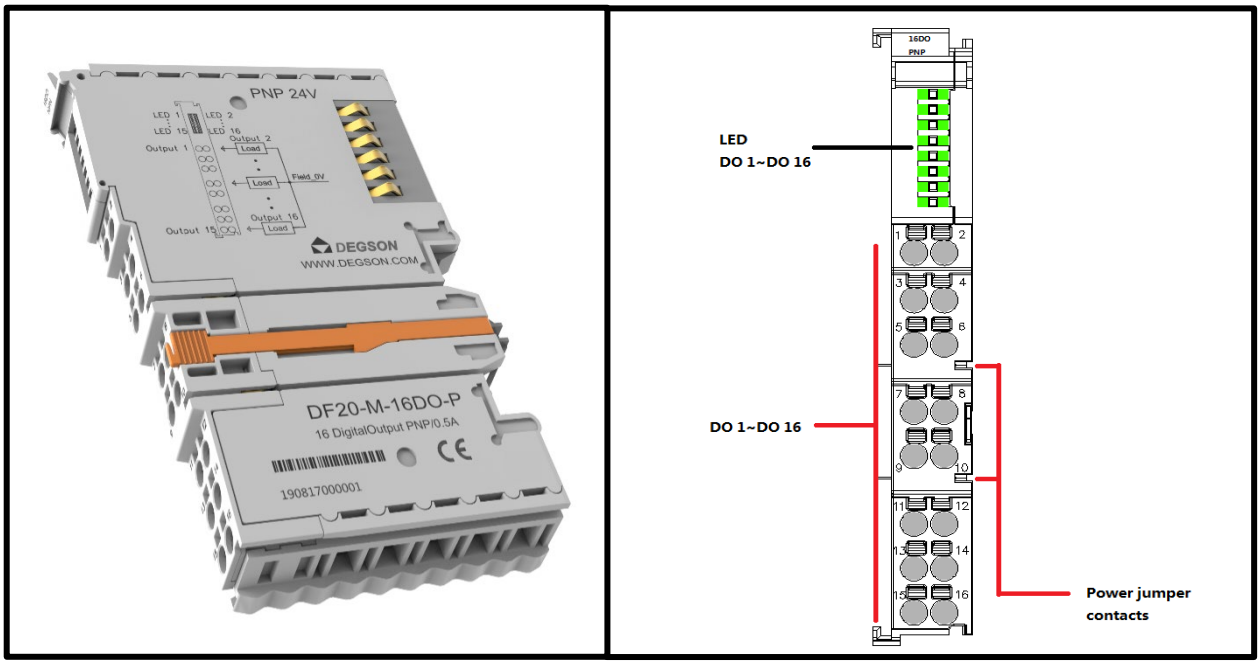
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- ➢ It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- ➢ 16-channel digital output, active PNP high level.
- ➢ Each output module has a noise-rejection filter.
- ➢ Each output module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

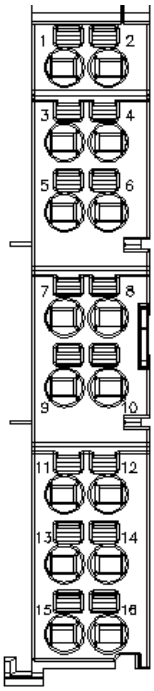


1.Specification

Technical data	
Number of digital outputs	16
Number of Channels	16
Signal type	Voltage
Signal type (voltage)	24V DC PNP
Connection type	1-line
Output characteristic	high-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	24V DC
Data size	2 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<75mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	16 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm^2/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

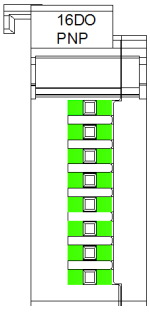
2.Hardware Interface

● Wiring Terminal



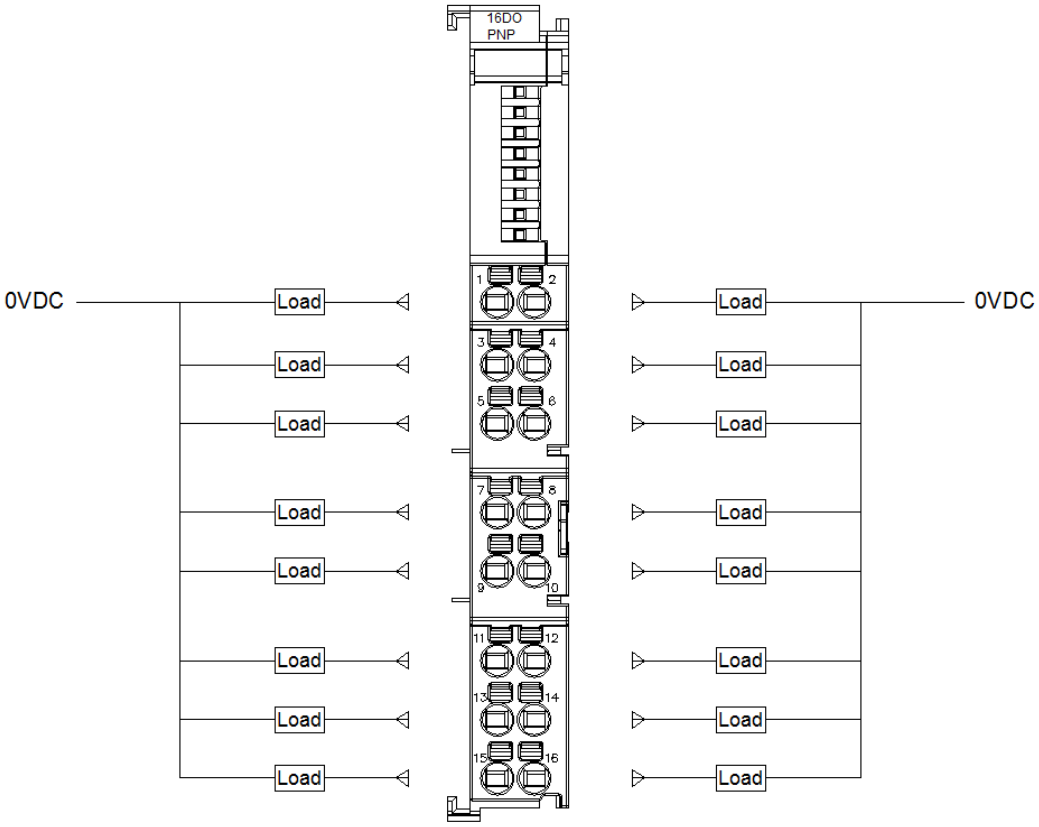
No.		Signal		Description
1	2	DO 1	DO 2	High level signal output
3	4	DO 3	DO 4	
5	6	DO 5	DO 6	
7	8	DO 7	DO 8	
9	10	DO 9	DO 10	
11	12	DO 11	DO 12	
13	14	DO 13	DO 14	
15	16	DO 15	DO 16	

● LED Indicator



1～16 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring


16DO
PNP
0VDC
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
0VDC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

3.Process data definition

DF20-M-16DO-P Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1
Byte 1	DO Channel 16	DO Channel 15	DO Channel 14	DO Channel 13	DO Channel 12	DO Channel 11	DO Channel 10	DO Channel 9

Data description:

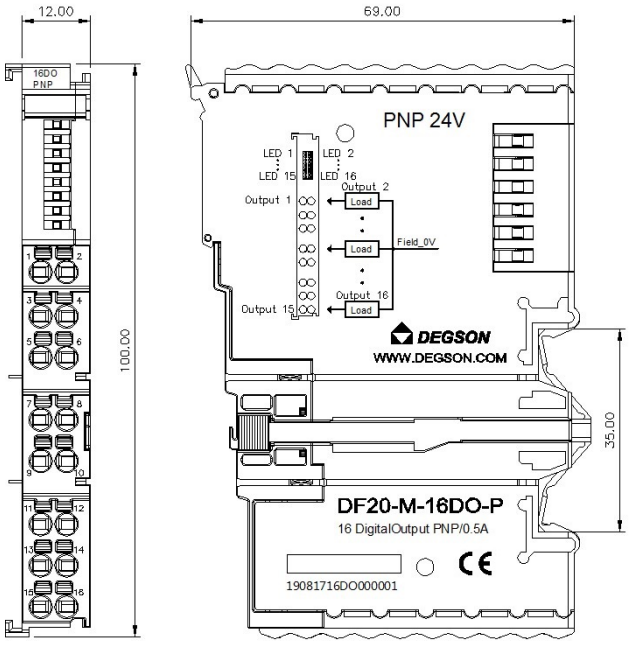
DO Channel （1~16）：When the bit is 1, the output signal of the corresponding channel is effective,the output is high level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

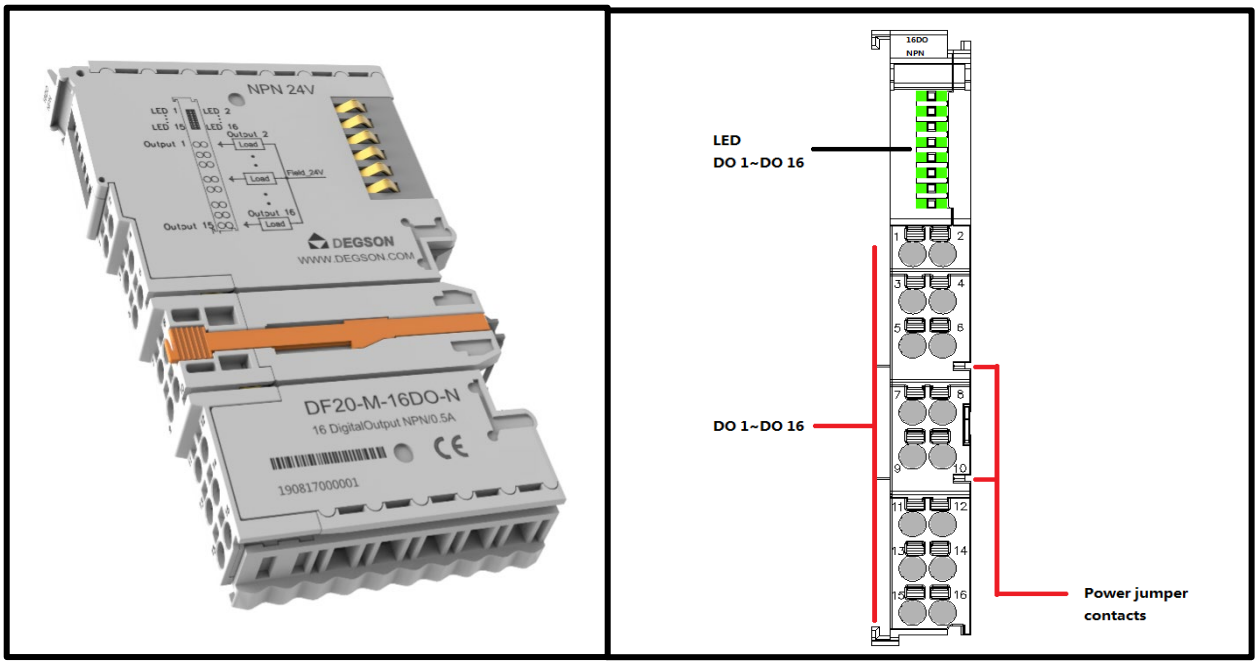
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- 16-channel digital output, active NPN low level.
- Each output module has a noise-rejection filter.
- Each output module is equipped with an LED indicator.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

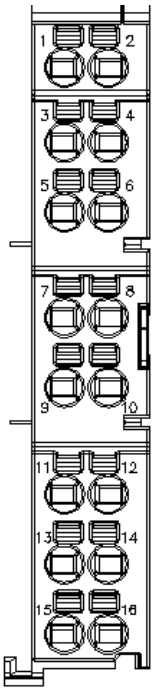


1.Specification

Technical data	
Number of digital outputs	16
Number of Channels	16
Signal type	Voltage
Signal type (voltage)	24V DC NPN
Connection type	1-line
Output characteristic	low-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	0V DC
Data size	2 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<75mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	16 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

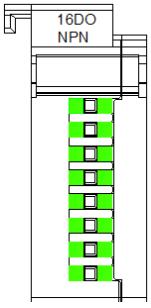
2.Hardware Interface

● Wiring Terminal



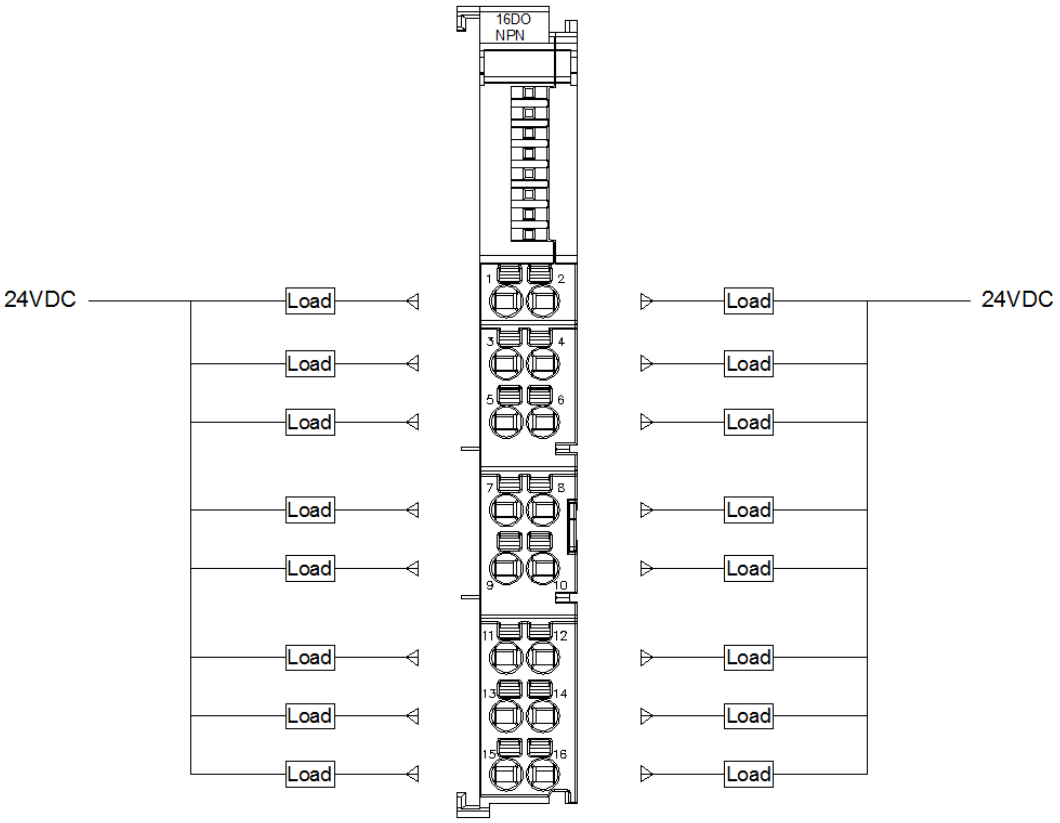
No.		Signal		Description
1	2	DO 1	DO 2	Low level signal output
3	4	DO 3	DO 4	
5	6	DO 5	DO 6	
7	8	DO 7	DO 8	
9	10	DO 9	DO 10	
11	12	DO 11	DO 12	
13	14	DO 13	DO 14	
15	16	DO 15	DO 16	

● LED Indicator



1～16 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring


16DO
NPN
24VDC
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
Load
24VDC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

3.Process data definition

DF20-M-16DO-N Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1
Byte 1	DO Channel 16	DO Channel 15	DO Channel 14	DO Channel 13	DO Channel 12	DO Channel 11	DO Channel 10	DO Channel 9

Data description:

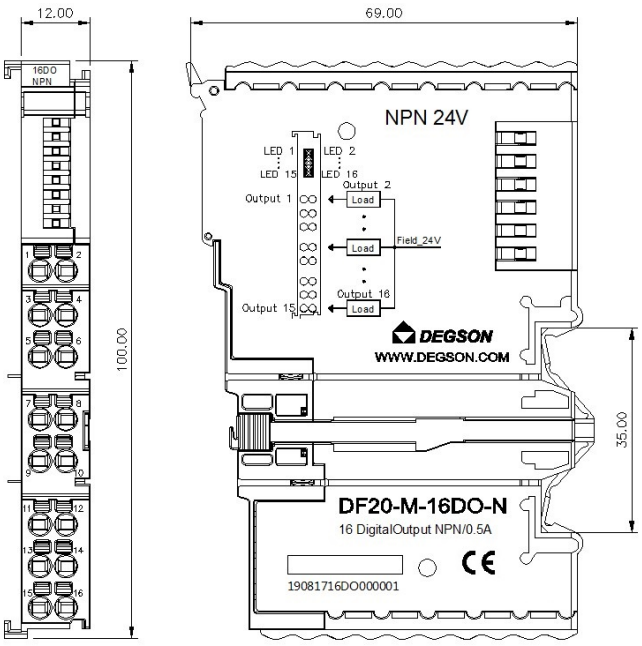
DO Channel （1~16）：When the bit is 1, the output signal of the corresponding channel is effective,the output is low level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

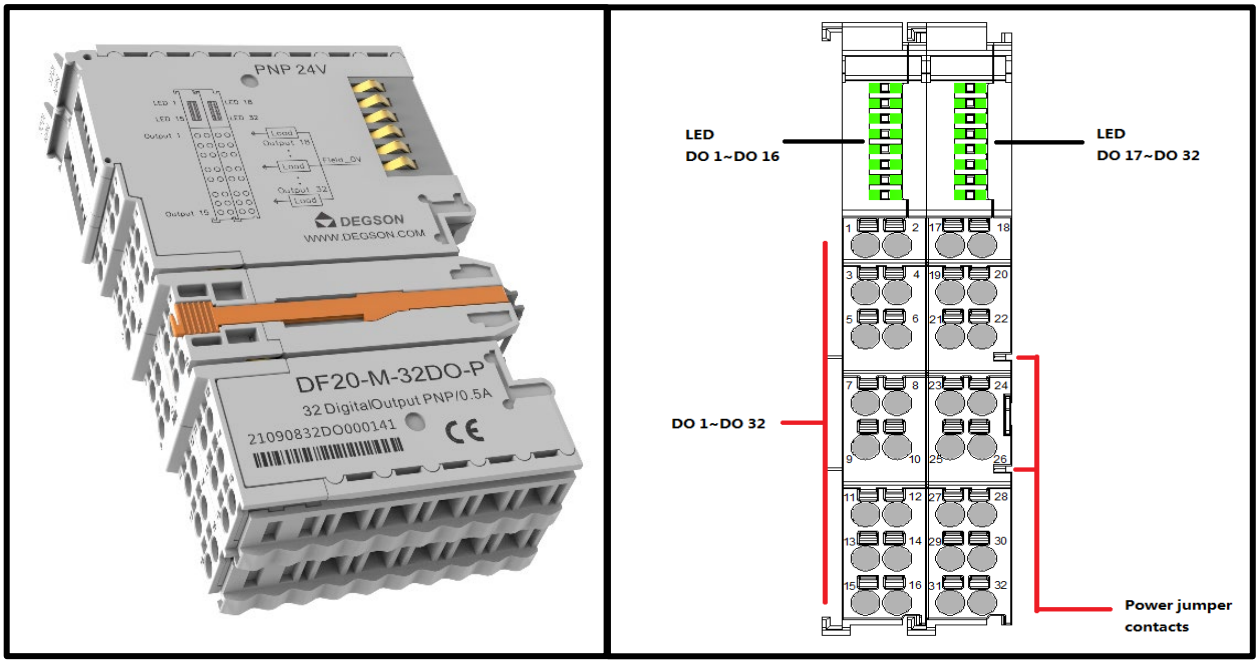
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- ➢ It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- ➢ 32-channel digital output, active PNP high level.
- ➢ Each output module has a noise-rejection filter.
- ➢ Each output module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

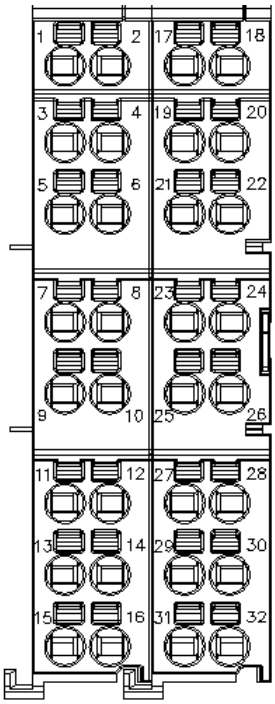


1.Specification

Technical data	
Number of digital outputs	32
Number of Channels	32
Signal type	Voltage
Signal type (voltage)	24V DC PNP
Connection type	1-line
Output characteristic	high-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	24V DC
Data size	4 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<100mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	32 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	32 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm^2/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

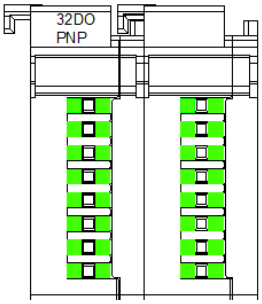
2.Hardware Interface

● Wiring Terminal



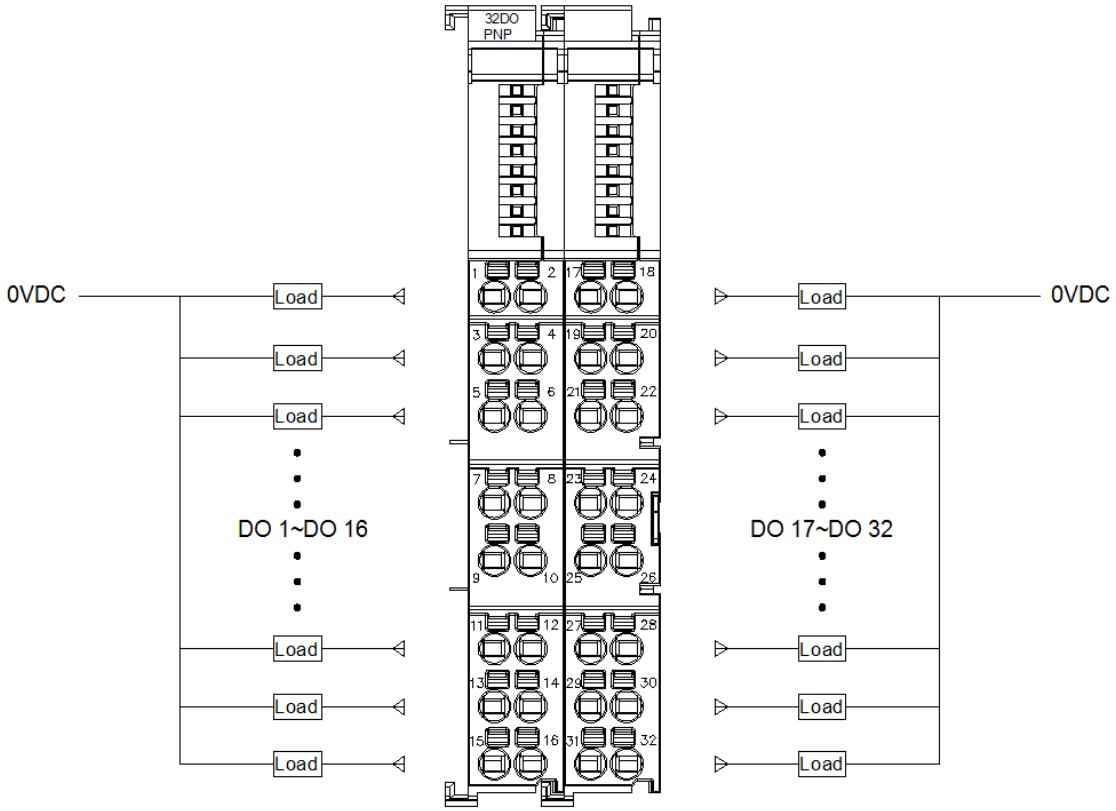
No.				Signal				Description
1	2	17	18	DO 1	DO 2	DO 17	DO 18	High level signal output
3	4	19	20	DO 3	DO 4	DO 19	DO 20	
5	6	21	22	DO 5	DO 6	DO 21	DO 22	
7	8	23	24	DO 7	DO 8	DO 23	DO 24	
9	10	25	26	DO 9	DO 10	DO 25	DO 26	
11	12	27	28	DO 11	DO 12	DO 27	DO 28	
13	14	29	30	DO 13	DO 14	DO 29	DO 30	
15	16	31	32	DO 15	DO 16	DO 31	DO 32	

● LED Indicator



1～32 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring



3.Process data definition

DF20-M-32DO-P Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1
Byte 1	DO Channel 16	DO Channel 15	DO Channel 14	DO Channel 13	DO Channel 12	DO Channel 11	DO Channel 10	DO Channel 9
Byte 2	DO Channel 24	DO Channel 23	DO Channel 22	DO Channel 21	DO Channel 20	DO Channel 19	DO Channel 18	DO Channel 17
Byte 3	DO Channel 32	DO Channel 31	DO Channel 30	DO Channel 29	DO Channel 28	DO Channel 27	DO Channel 26	DO Channel 25

Data description:

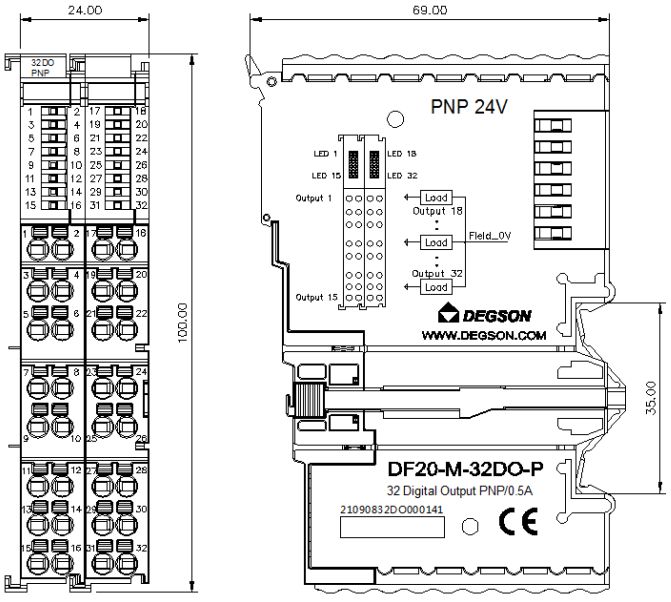
DO Channel （1~32）：When the bit is 1, the output signal of the corresponding channel is effective,the output is high level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

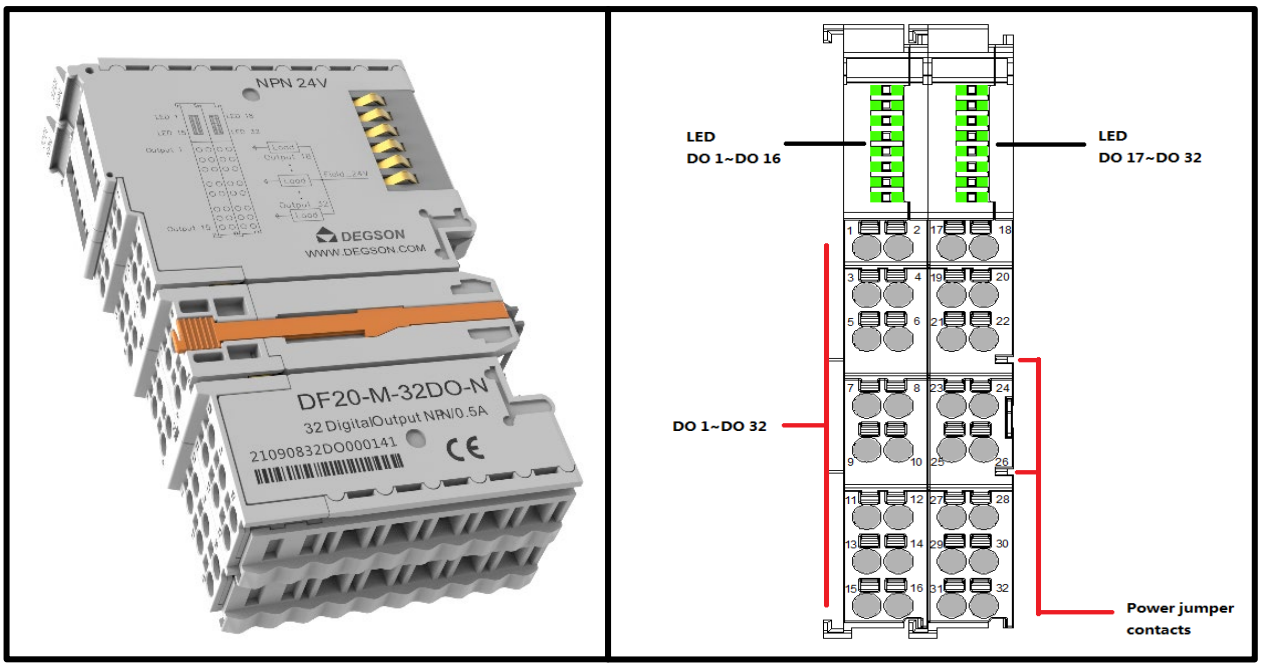
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- ➢ It transmits binary control signals from the automation device to the connected actuators (e.g., magnetic valves)
- ➢ 32-channel digital output, active NPN low level.
- ➢ Each output module has a noise-rejection filter.
- ➢ Each output module is equipped with an LED indicator.
- ➢ Field and system levels are Photoelectric isolated.
- ➢ Protection level IP20.

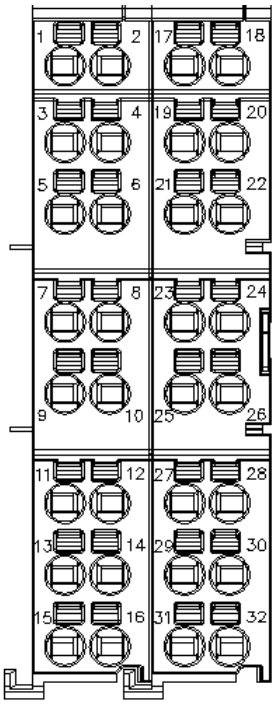


1.Specification

Technical data	
Number of digital outputs	32
Number of Channels	32
Signal type	Voltage
Signal type (voltage)	24V DC NPN
Connection type	1-line
Output characteristic	low-side switching
Switching Frequency (resistance/lamp load)	<1000Hz
Switching Frequency (Inductive load)	<0.2Hz
Response Time of the Protection Circuit	<100us
Output current per channel(MAX)	500 mA
Load type	Inductance, resistance, lamp
“0” signal voltage	high-impedance state
“1” signal voltage	0V DC
Data size	4 byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<100mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	32 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	32 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

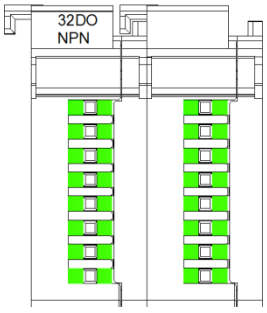
2.Hardware Interface

● Wiring Terminal



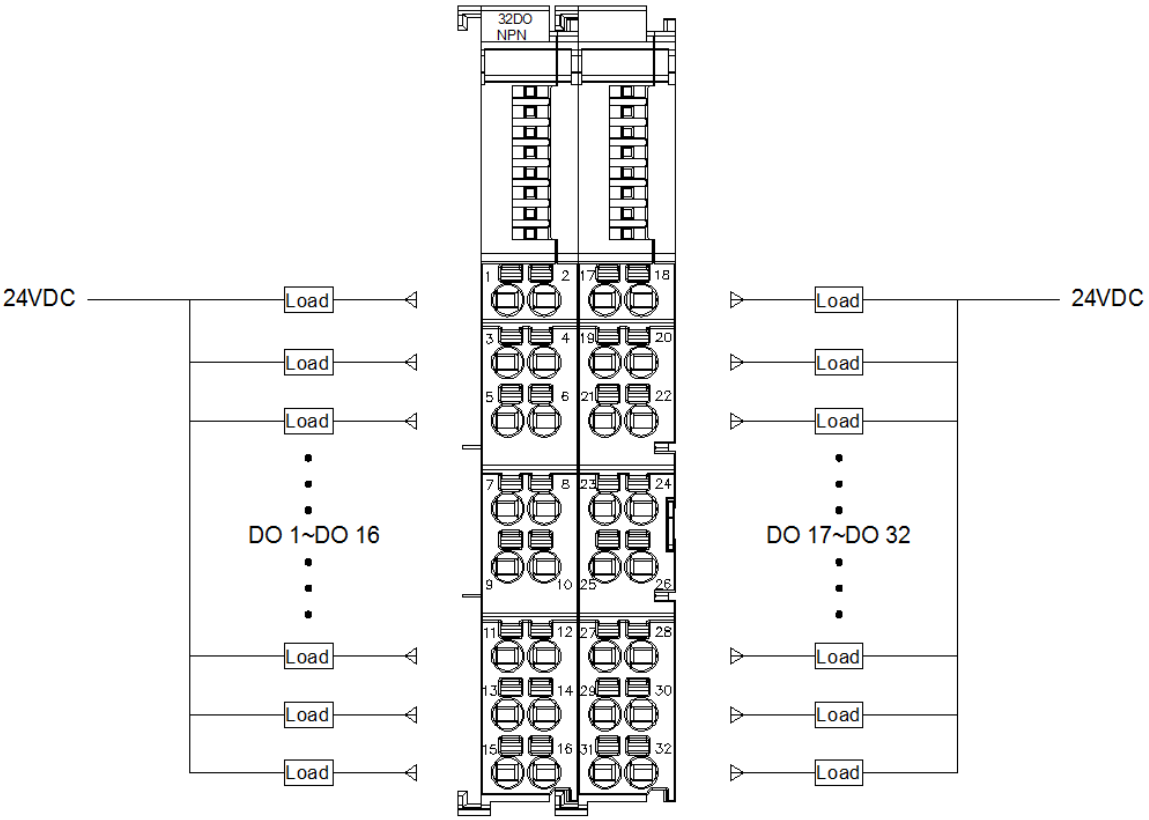
No.				Signal				Description
1	2	17	18	DO 1	DO 2	DO 17	DO 18	Low level signal output
3	4	19	20	DO 3	DO 4	DO 19	DO 20	
5	6	21	22	DO 5	DO 6	DO 21	DO 22	
7	8	23	24	DO 7	DO 8	DO 23	DO 24	
9	10	25	26	DO 9	DO 10	DO 25	DO 26	
11	12	27	28	DO 11	DO 12	DO 27	DO 28	
13	14	29	30	DO 13	DO 14	DO 29	DO 30	
15	16	31	32	DO 15	DO 16	DO 31	DO 32	

● LED Indicator



1～32 channel Indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

Wiring



3.Process data definition

DF20-M-32DO-N Module process data definition

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Channel 8	DO Channel 7	DO Channel 6	DO Channel 5	DO Channel 4	DO Channel 3	DO Channel 2	DO Channel 1
Byte 1	DO Channel 16	DO Channel 15	DO Channel 14	DO Channel 13	DO Channel 12	DO Channel 11	DO Channel 10	DO Channel 9
Byte 2	DO Channel 24	DO Channel 23	DO Channel 22	DO Channel 21	DO Channel 20	DO Channel 19	DO Channel 18	DO Channel 17
Byte 3	DO Channel 32	DO Channel 31	DO Channel 30	DO Channel 29	DO Channel 28	DO Channel 27	DO Channel 26	DO Channel 25

Data description:

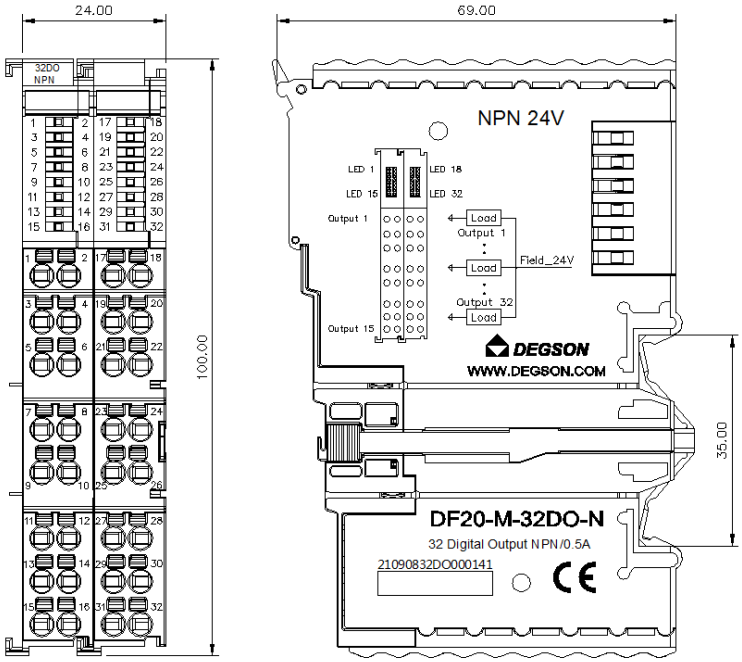
DO Channel （1~32）：When the bit is 1, the output signal of the corresponding channel is effective,the output is low level, and the output is invalid when it is 0.

1：Output signal valid　　0：Output signal invalid

4.Machinery installation

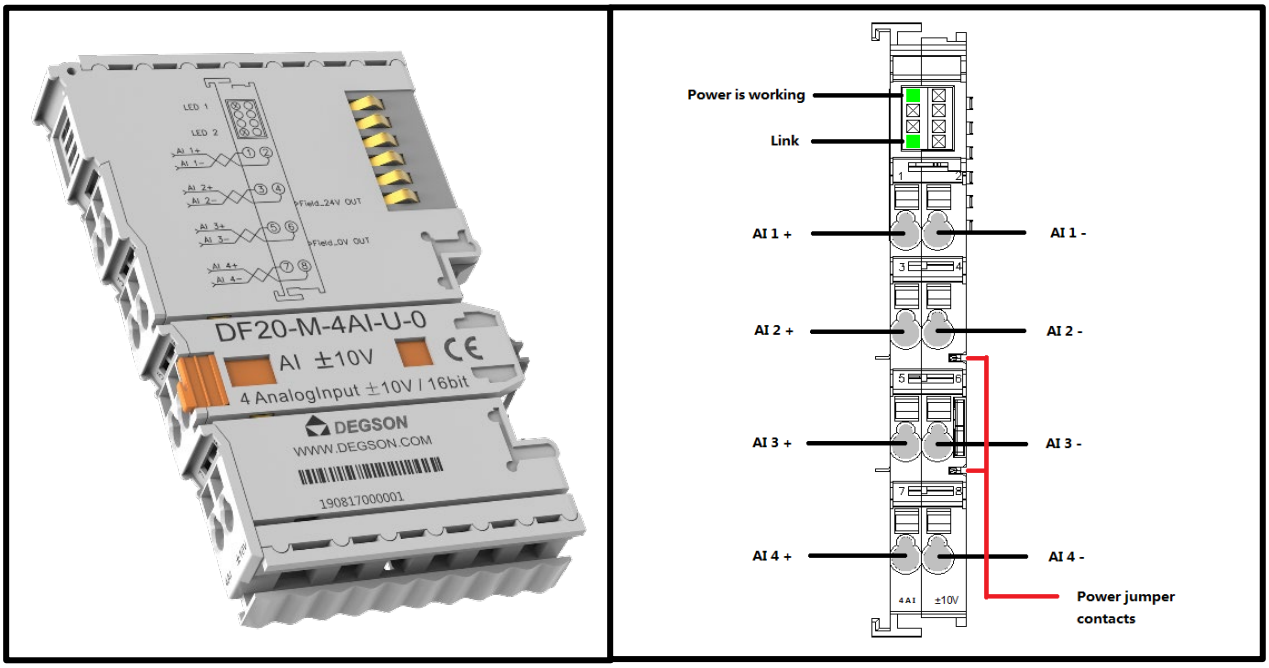
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 4 channel Analog input /voltage type /±10V (DF20-M-4AI-U-0)

- This analog input module processes standard ±10V signals.
- 4 channel Analog input , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

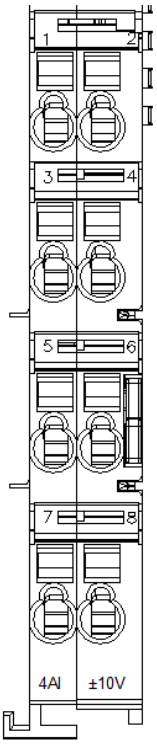


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%
Data size	8 Byte
Measuring range	Voltage（-10～+10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(-10～+10V) -27648～27648
Measuring range(Others)	(-10～+10V) -32768～32767
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	>450KΩ
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

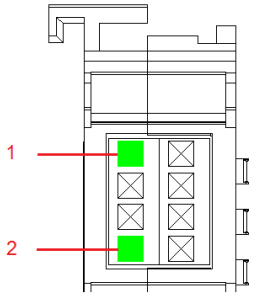
2.Hardware Interface

- **Wiring Terminal**



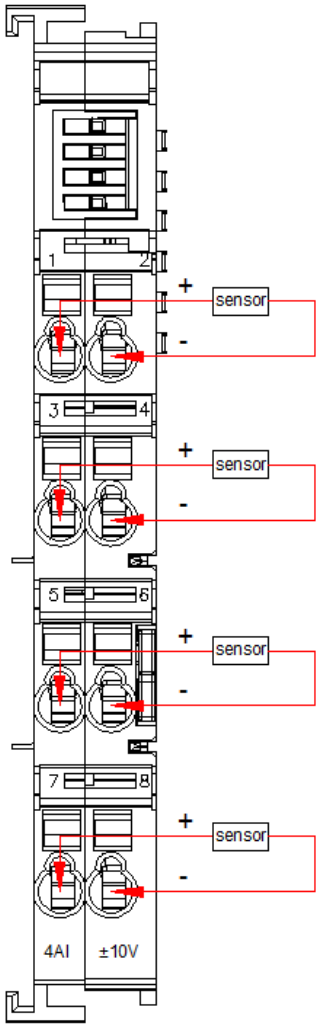
No.	Signal	Description
1	AI 1+	Voltage input channel1
2	AI 1-	
3	AI 2+	Voltage input channel2
4	AI 2-	
5	AI 3+	Voltage input channel3
6	AI 3-	
7	AI 4+	Voltage input channel4
8	AI 4-	

● LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

● Wiring



3.Process data definition

DF20-M-4AI-U-0 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									

Data description:

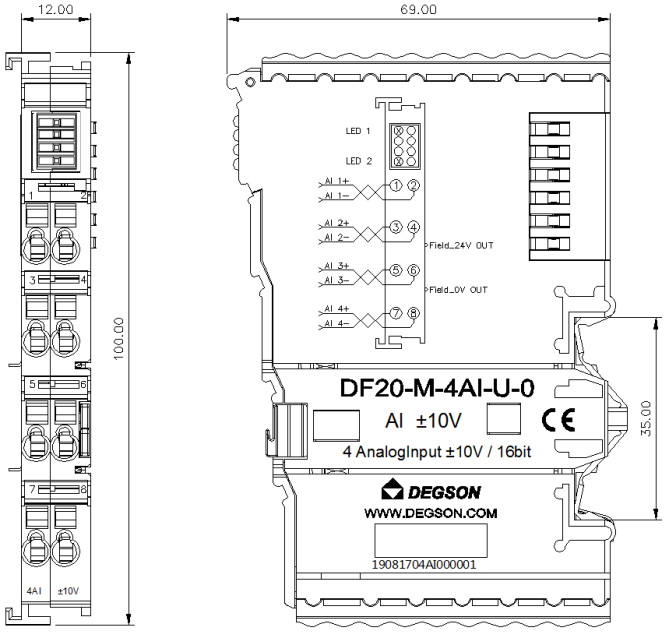
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-U-0）				
(Profinet/Ethernet IP)		**Other**		
（-10V~10V）	Decimal	（-10V~10V）	Decimal	
>10.12	32767	/	/	Overflow
10.12 … … 10+0.3617	27979 … … 27649	/	/	Exceed the upper limit
10 … … -10	27648 … … -27648	10 … … -10	32768 … … -32767	Rated range
-10-0.3617 … … -10.12	-27649 … … -27979	/	/	Exceed the lower limit
<-10.12	-32767	/	/	Underflow

4.Machinery installation

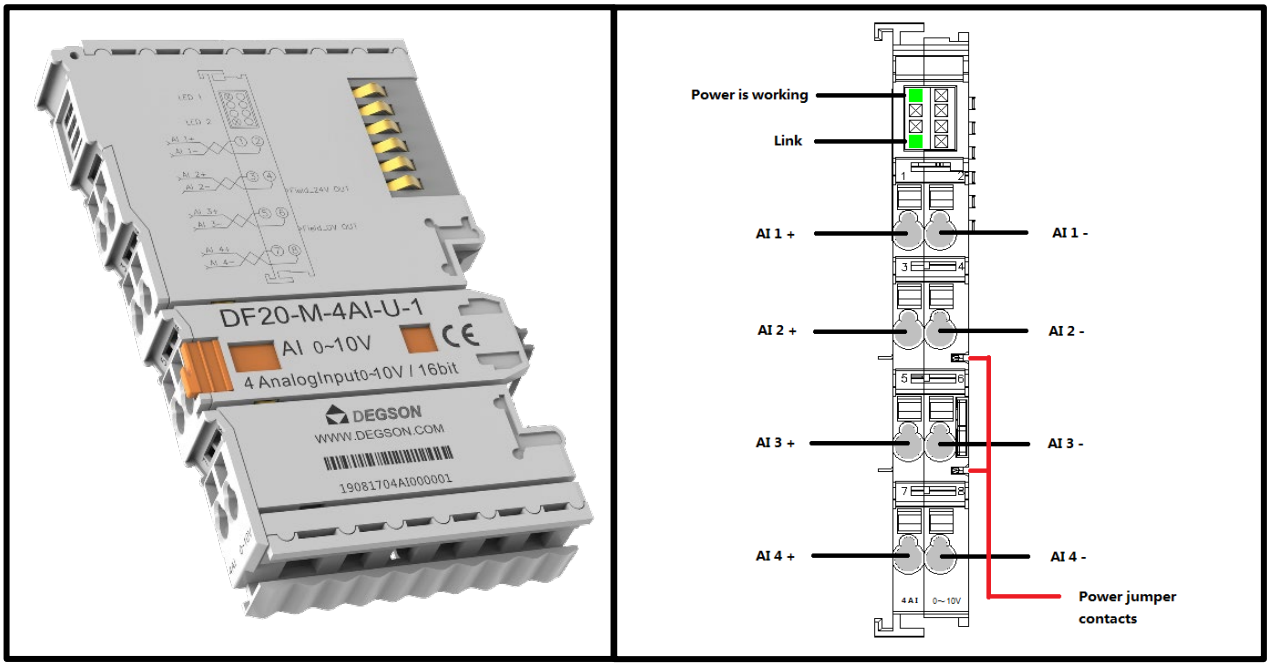
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- This analog input module processes standard 0～10V signals.
- 4 channel Analog input , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

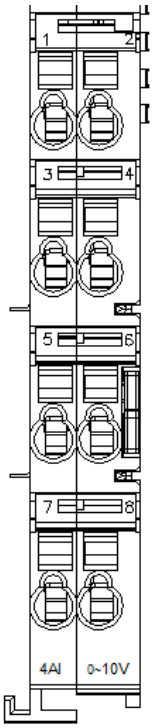


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%
Data size	8 Byte
Measuring range	voltage（0～+10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～+10V) 0～27648
Measuring range(Others)	(0～+10V) 0～65535
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	>450KΩ
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

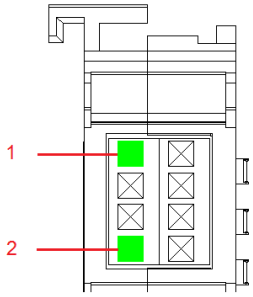
2.Hardware Interface

- **Wiring Terminal**



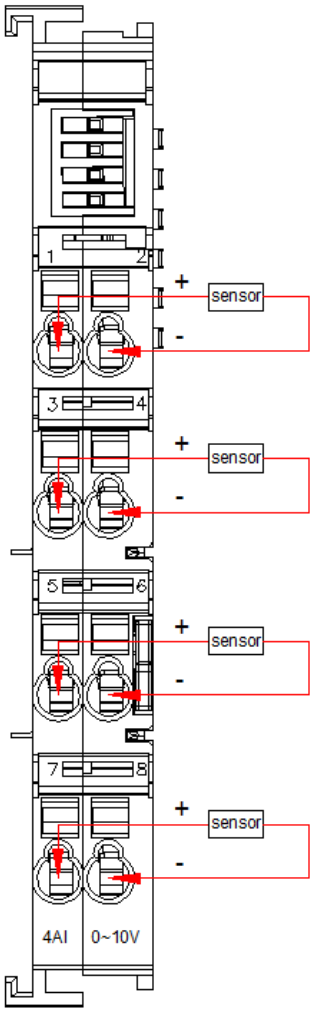
No.	Signal	Description
1	AI 1+	Voltage input channel1
2	AI 1-	
3	AI 2+	Voltage input channel2
4	AI 2-	
5	AI 3+	Voltage input channel3
6	AI 3-	
7	AI 4+	Voltage input channel4
8	AI 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AI-U-1 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									

Data description:

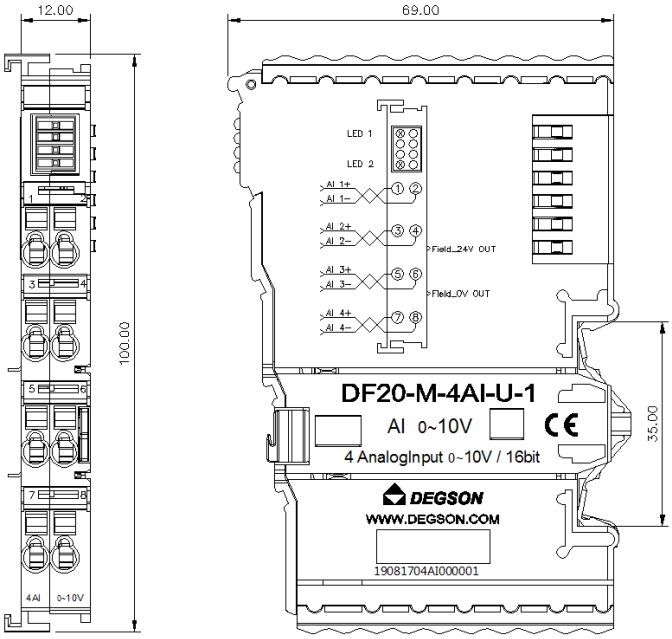
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-U-1）				
(Profinet/Ethernet IP)		**Other**		
（0V~10V）	Decimal	（0V~10V）	Decimal	
>10.12	32767	/	/	Overflow
10.12 … … 10+0.3617	27979 … … 27649	/	/	Exceed the upper limit
10 … … 0	27648 … … 0	10 … … 0	65535 … … 0	Rated range

4.Machinery installation

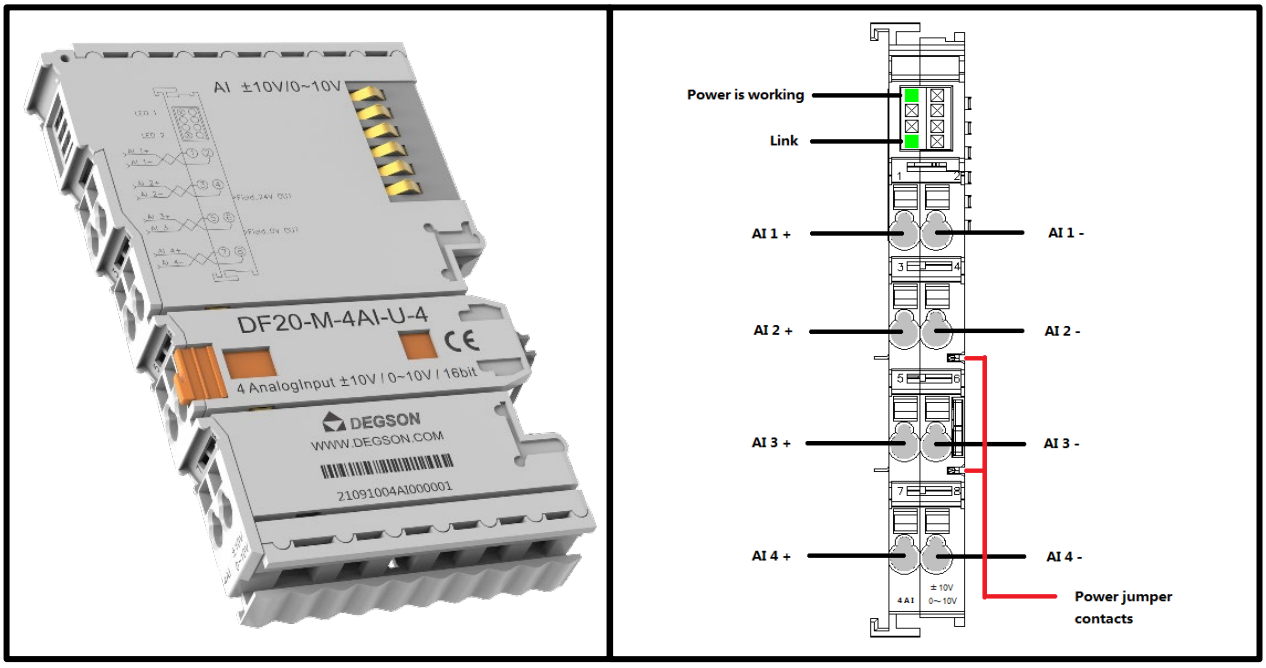
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 4 channel Analog input /voltage type /±10V ,0～10V(DF20-M-4AI-U-4)

- This analog input module processes standard ±10V ,0～10V signals.
- 4 channel Analog input , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

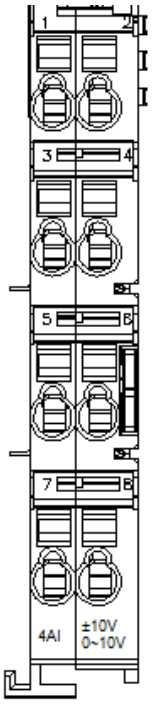


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%
Data size	8 Byte
Measuring range	voltage（±10V/0～+10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～+10V) 0～27648 (-10～+10V) -27648～27648
Measuring range(Others)	(0～+10V) -32768～32767 (-10～+10V) -32768～32767
Sampling rate	20～300Hz（Configuration）
Conversion time	1ms
Internal Resistance	>450KΩ
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

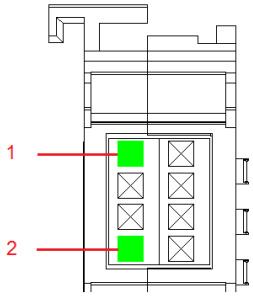
2.Hardware Interface

- **Wiring Terminal**



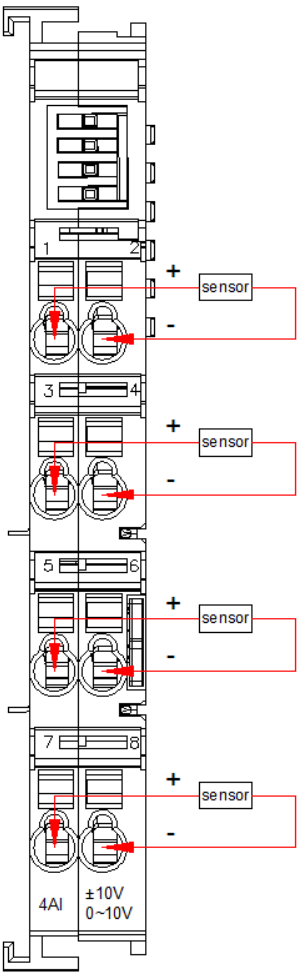
No.	Signal	Description
1	AI 1+	Voltage input channel1
2	AI 1-	
3	AI 2+	Voltage input channel2
4	AI 2-	
5	AI 3+	Voltage input channel3
6	AI 3-	
7	AI 4+	Voltage input channel4
8	AI 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AI-U-4 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									

Data description:

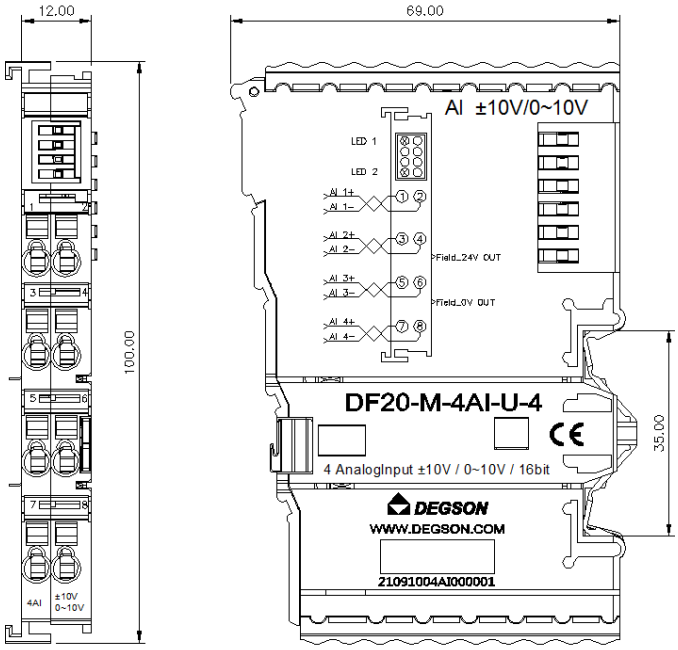
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-U-4）								
(Profinet/Ethernet IP)				**Other**				
（-10V~10V）	Decimal	（0V~10V）	Decimal	(-10V~10V）	Decimal	（0V~10V）	Decimal	
>10.12	32767	>10.12	32767	/	/	/	/	Overflow
10.12 … … 10+0.3617	27979 … … 27649	10.12 … … 10+0.3617	27979 … … 27649	/	/	/	/	Exceed the upper limit
10 … … -10	27648 … … -27648	10 … … 0	27648 … … 0	10 … … -10	32767 … … -32768	10 … … 0	32767 … … 0	Rated range
-10-0.3617 … … -10.12	-27649 … … -27979	/	/	/	/	/	/	Exceed the lower limit
<-10.12	-32768	/	/	/	/	/	/	Underflow

4.Machinery installation

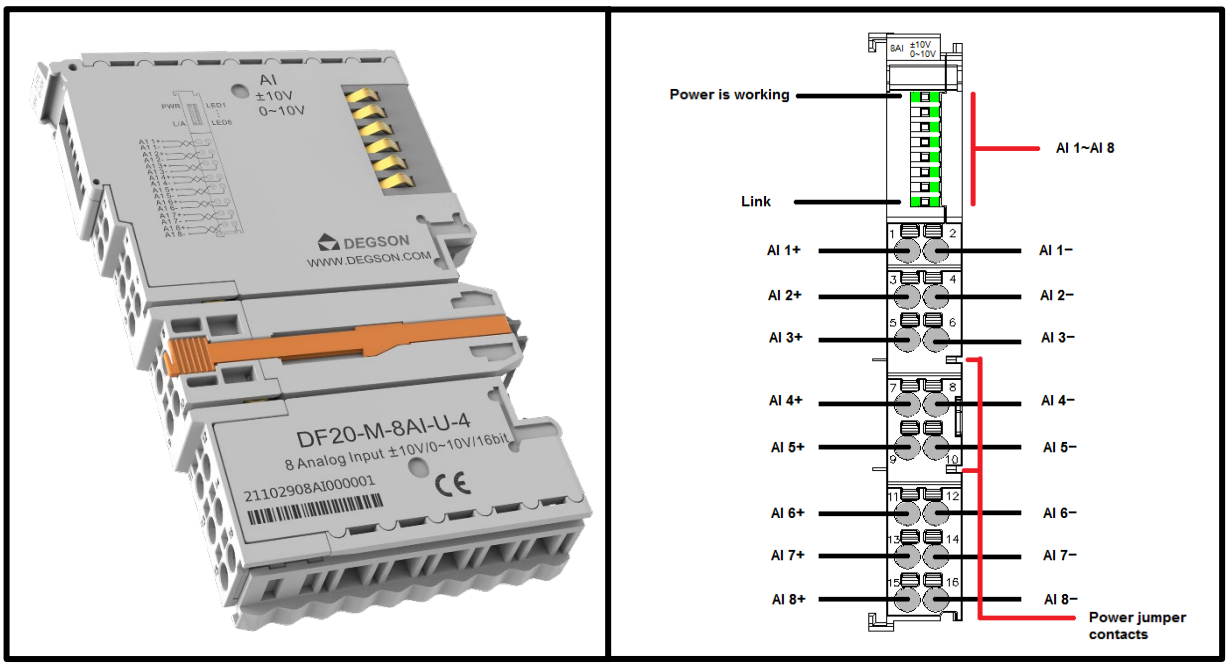
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 8 channel Analog input /voltage type /±10V ,0～10V(DF20-M-8AI-U-4)

- This analog input module processes standard ±10V ,0～10V signals.
- 8 channel Analog input , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each input channel has an LED indicator light.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

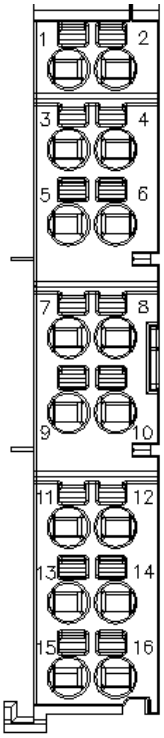


1.Specification

Technical data	
Number of channels	8
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	32 Bit
Precision	0.20%
Data size	16 Byte
Measuring range	voltage（±10V/0～+10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～+10V) 0～27648 (-10～+10V) -27648～27648
Measuring range(Others)	(0～+10V) -32768～32767 (-10～+10V) -32768～32767
Sampling rate	20～300Hz（Configuration）
Conversion time	1ms
Internal Resistance	>450KΩ
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	10 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

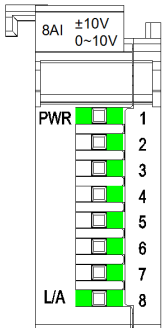
2.Hardware Interface

- **Wiring Terminal**



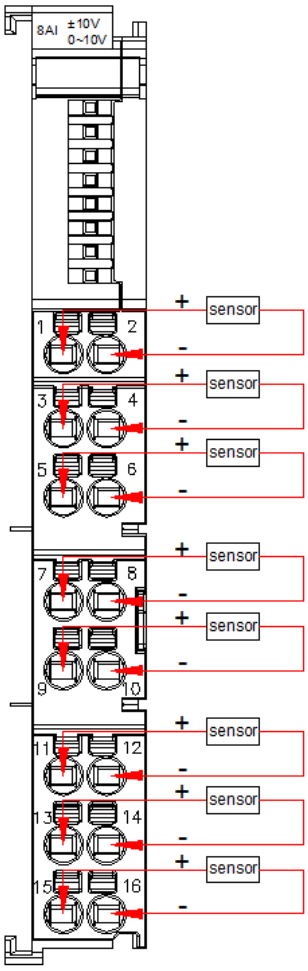
No.		Signal		Description
1	2	AI 1+	AI 1-	Voltage input channel1
3	4	AI 2+	AI 2-	Voltage input channel2
5	6	AI 3+	AI 3-	Voltage input channel3
7	8	AI 4+	AI 4-	Voltage input channel4
9	10	AI 5+	AI 5-	Voltage input channel5
11	12	AI 6+	AI 6-	Voltage input channel6
13	14	AI 7+	AI 7-	Voltage input channel7
15	16	AI 8+	AI 8-	Voltage input channel8

LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
2	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
3	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
4	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
5	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
6	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
7	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
8	Green:ON		Input signal invalid
	Green:OFF		Input signal valid

● Wiring



3.Process data definition

DF20-M-8AI-U-4 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									
Byte 8	Analog Input Data(Channel 5)								Int16
Byte 9									
Byte 10	Analog Input Data(Channel 6)								Int16
Byte 11									
Byte 12	Analog Input Data(Channel 7)								Int16
Byte 13									
Byte 14	Analog Input Data(Channel 8)								Int16
Byte 15									

Data description:

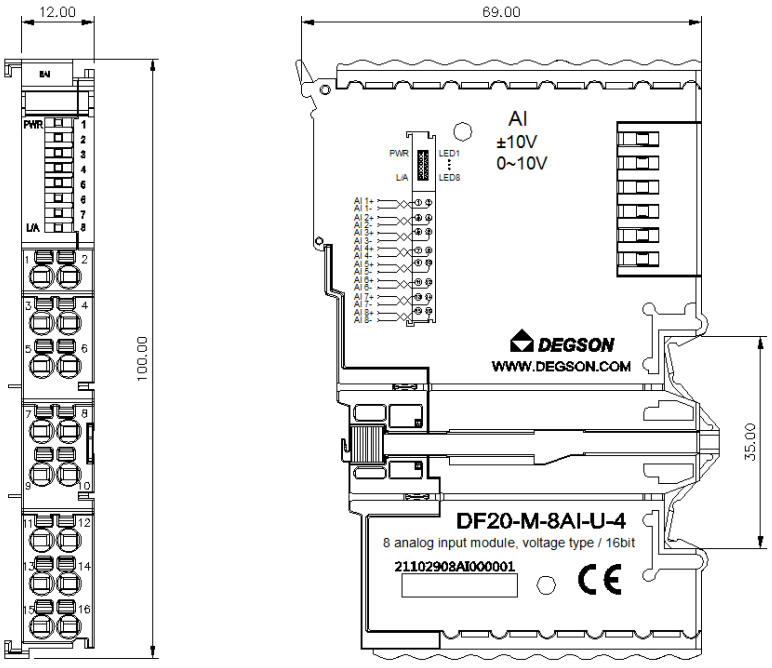
Analog Input Data(Channel 1~8)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-8AI-U-4）								
(Profinet/Ethernet IP)				Other				
（-10V~10V）	Decimal	（0V~10V）	Decimal	（-10V~10V）	Decimal	（0V~10V）	Decimal	
>10.12	32767	>10.12	32767	/	/	/	/	Overflow
10.12 … … 10+0.3617	27979 … … 27649	10.12 … … 10+0.3617	27979 … … 27649	/	/	/	/	Exceed the upper limit
10 … … -10	27648 … … -27648	10 … … 0	27648 … … 0	10 … … -10	32767 … … -32768	10 … … 0	32767 … … 0	Rated range
-10-0.3617 … … -10.12	-27649 … … -27979	/	/	/	/	/	/	Exceed the lower limit
<-10.12	-32768	/	/	/	/	/	/	Underflow

4.Machinery installation

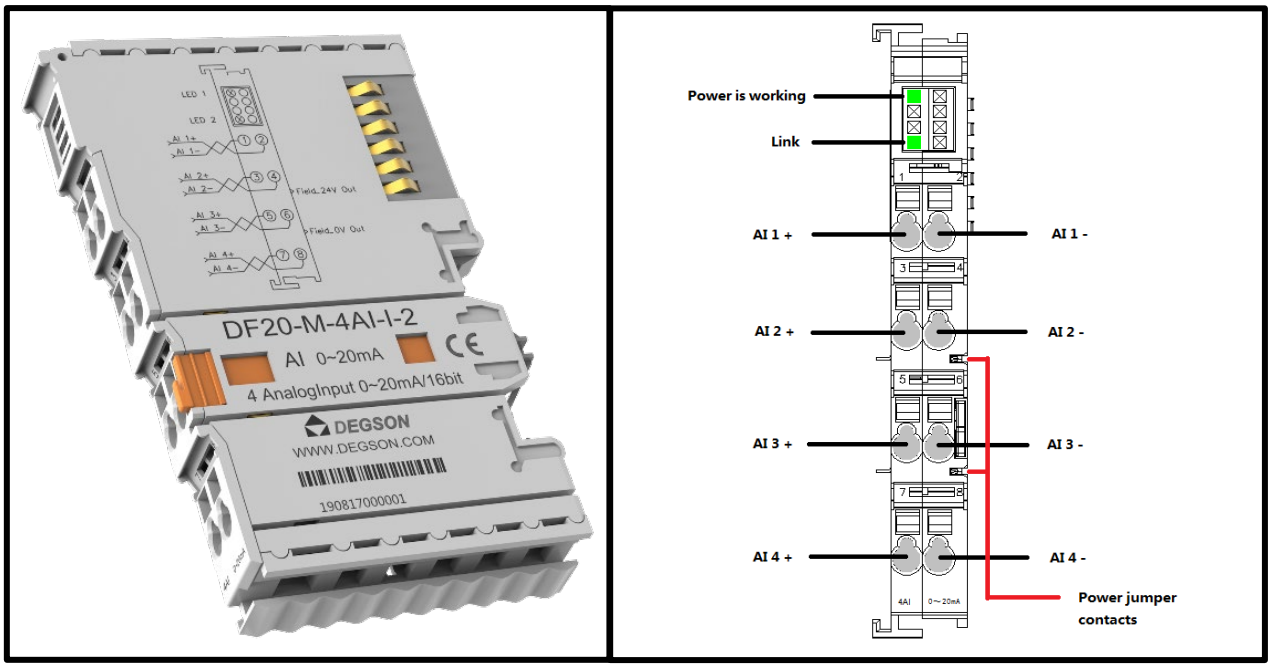
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- This analog input module processes standard 0～20mA signals.
- 4 channel Analog input , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

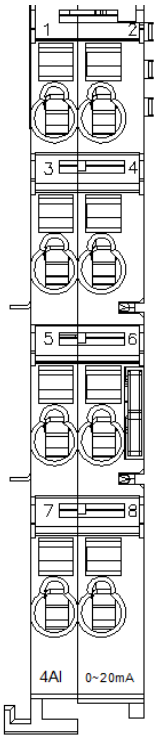


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%/±50ppm/K max.
Data size	8 Byte
Measuring range	current（0～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～20mA) 0～27648
Measuring range(Others)	(0～20mA) 0～65535
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	100Ω
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

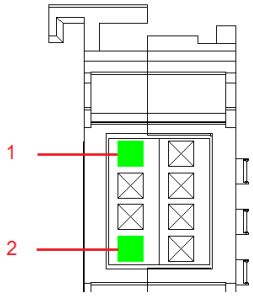
2.Hardware Interface

● Wiring Terminal



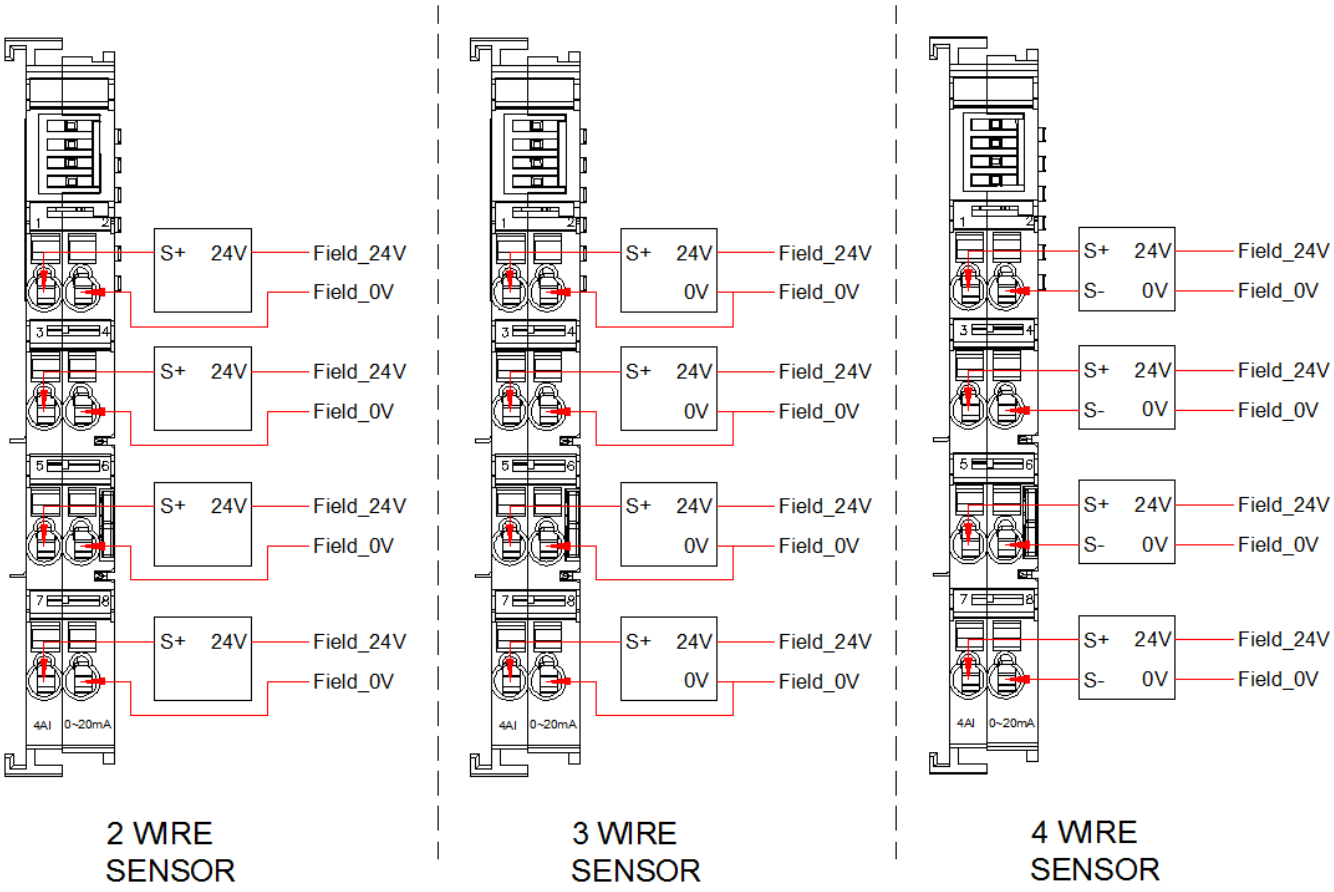
No.	Signal	Description
1	AI 1+	Current input channel1
2	AI 1-	
3	AI 2+	Current input channel2
4	AI 2-	
5	AI 3+	Current input channel3
6	AI 3-	
7	AI 4+	Current input channel4
8	AI 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AI-I-2 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Uint16
Byte 7									

Data description:

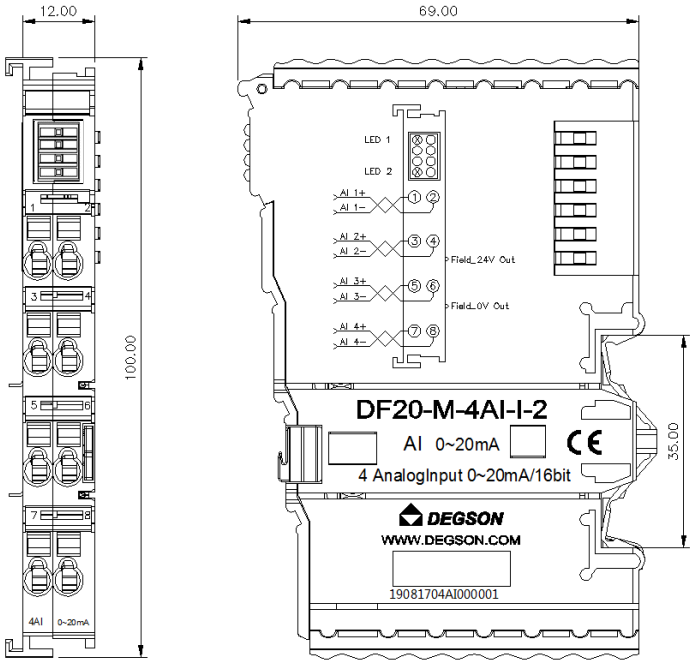
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-I-2）				
(Profinet/Ethernet IP)		Other		
（0~20mA）	Decimal	（0~20mA）	Decimal	
>23.515	32767	/	/	Overflow
23.515 … … 20.0007	32511 … … 27649	/	/	Exceed the upper limit
20 … … 0	27648 … … 0	20 … … 0	65535 … … 0	Rated range
<0.0 … … …	-1 … … -4864	/	/	Exceed the lower limit
/	-32768	/	/	Underflow

4.Machinery installation

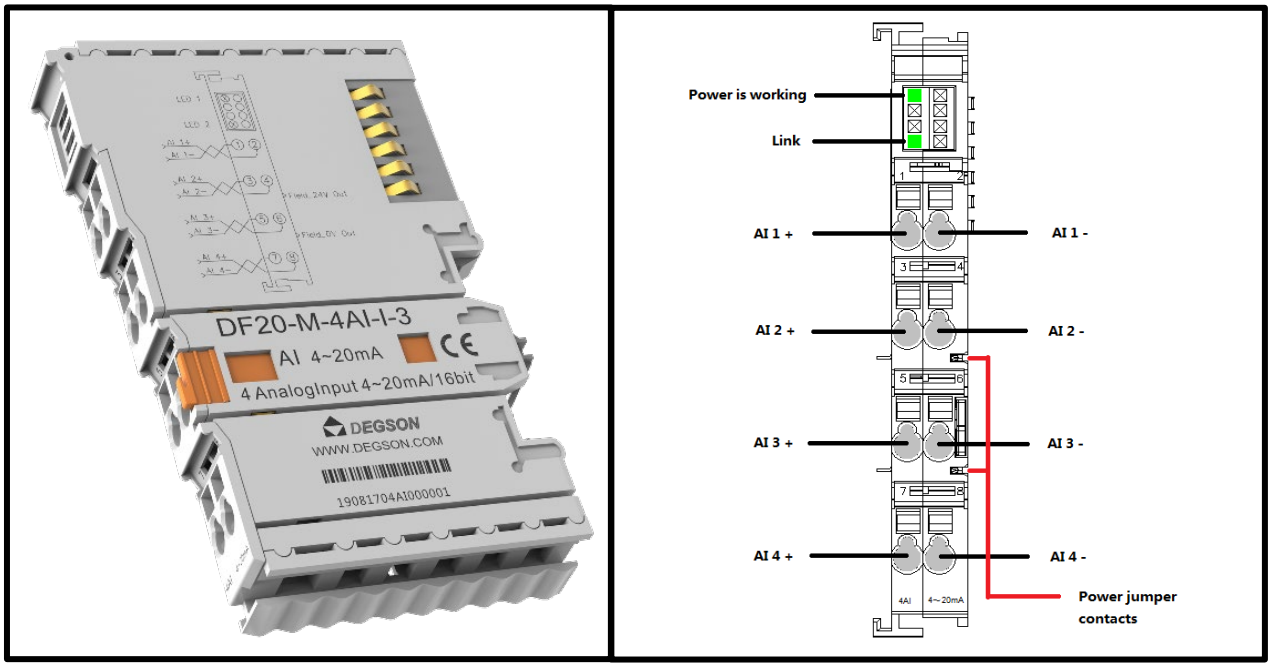
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- This analog input module processes standard 4～20mA signals.
- 4 channel Analog input , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

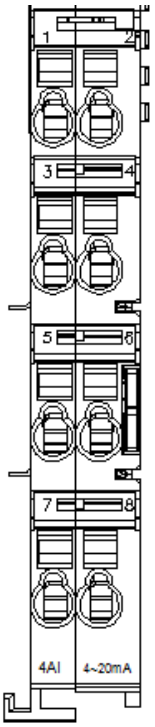


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%/±50ppm/K max.
Data size	8 Byte
Measuring range	current（4～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(4～20mA) 0～27648
Measuring range(Others)	(4～20mA) 0～65535
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	100Ω
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

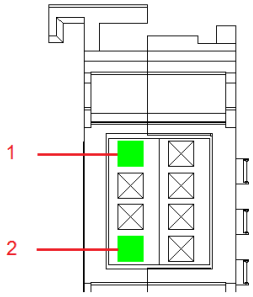
2.Hardware Interface

- **Wiring Terminal**



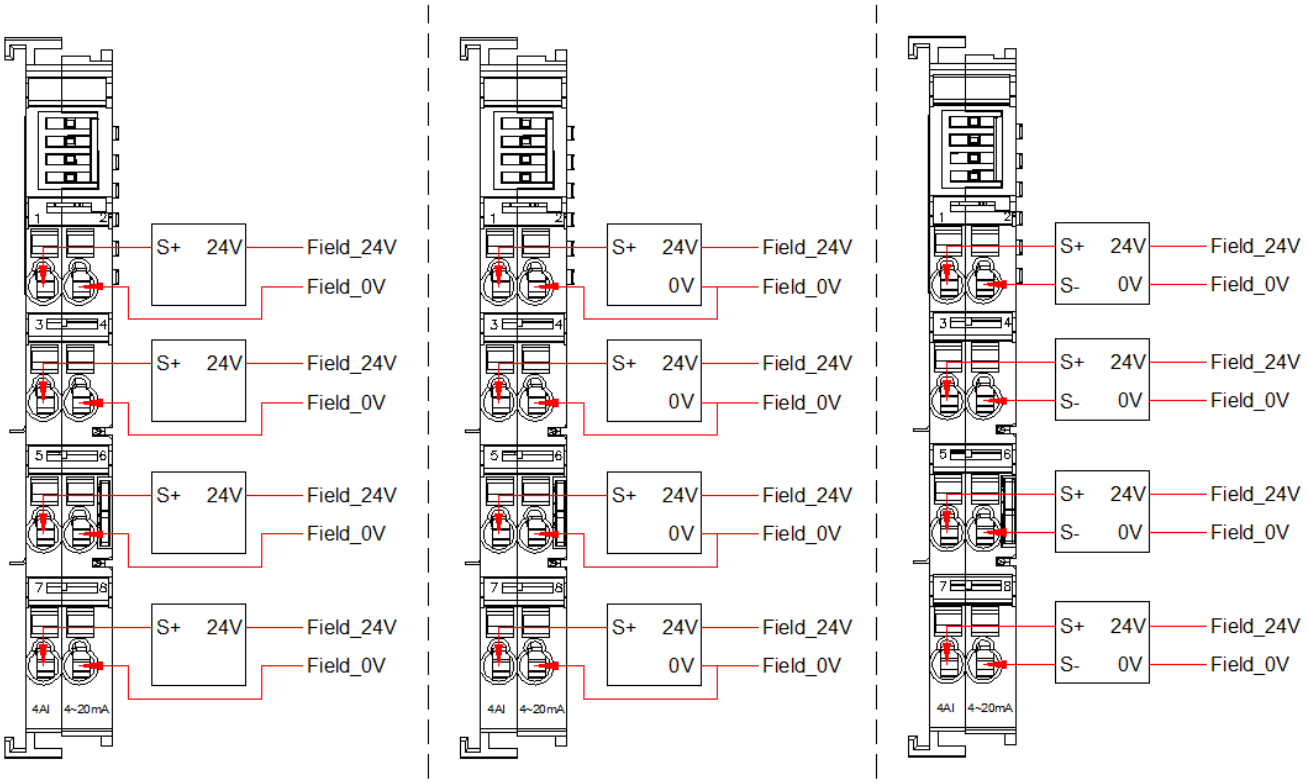
No.	Signal	Description
1	AI 1+	Current input channel1
2	AI 1-	
3	AI 2+	Current input channel2
4	AI 2-	
5	AI 3+	Current input channel3
6	AI 3-	
7	AI 4+	Current input channel4
8	AI 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AI-I-3 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Uint16
Byte 7									

Data description:

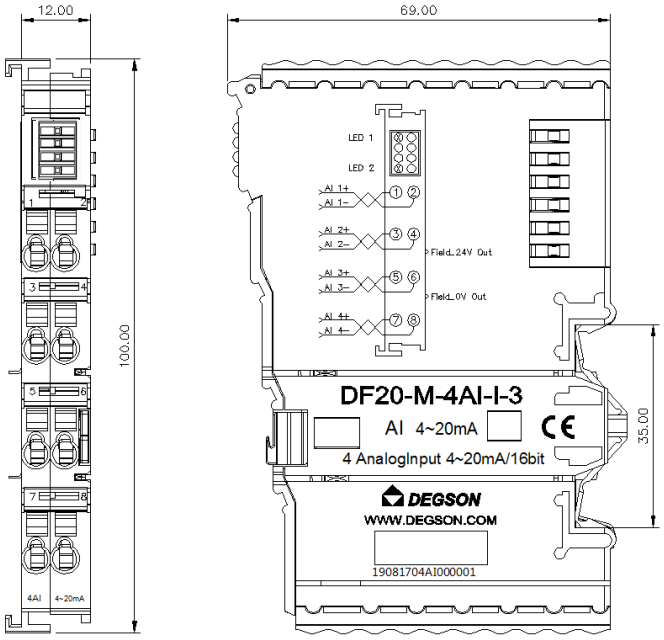
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-I-3）				
(Profinet/Ethernet IP)		**Other**		
（4~20mA）	Decimal	（4~20mA）	Decimal	
/	/	/	/	Overflow
/	/	/	/	Exceed the upper limit
20 … … 4	27648 … … 0	20 … … 4	65535 … … 0	Rated range
/	/	/	/	Exceed the lower limit
/	/	/	/	Underflow

3.Machinery installation

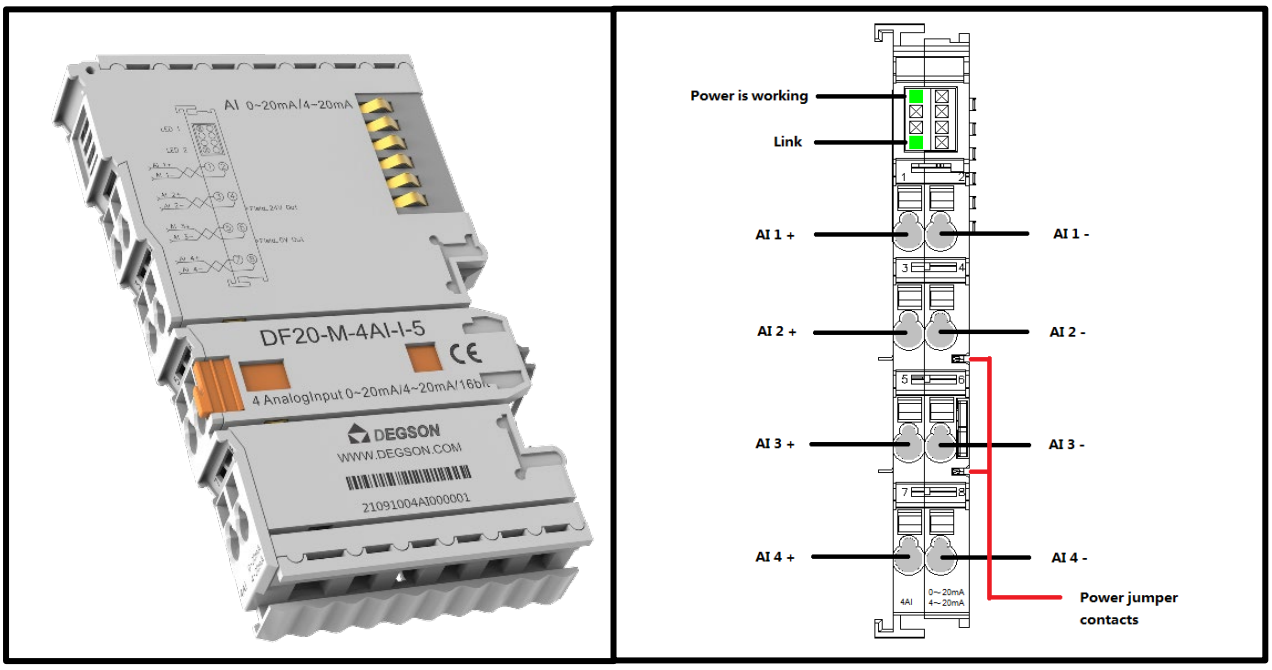
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- This analog input module processes standard 0～20mA ,4～20mA signals.
- 4 channel Analog input , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

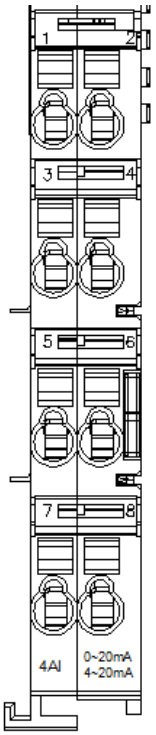


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%/±50ppm/K max.
Data size	8 Byte
Measuring range	current（0～20mA/4～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<120mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～20mA/4～20mA) 0～27648
Measuring range(Others)	(0～20mA/4～20mA) 0～65535
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	100Ω
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

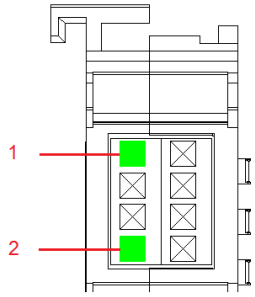
2.Hardware Interface

- **Wiring Terminal**



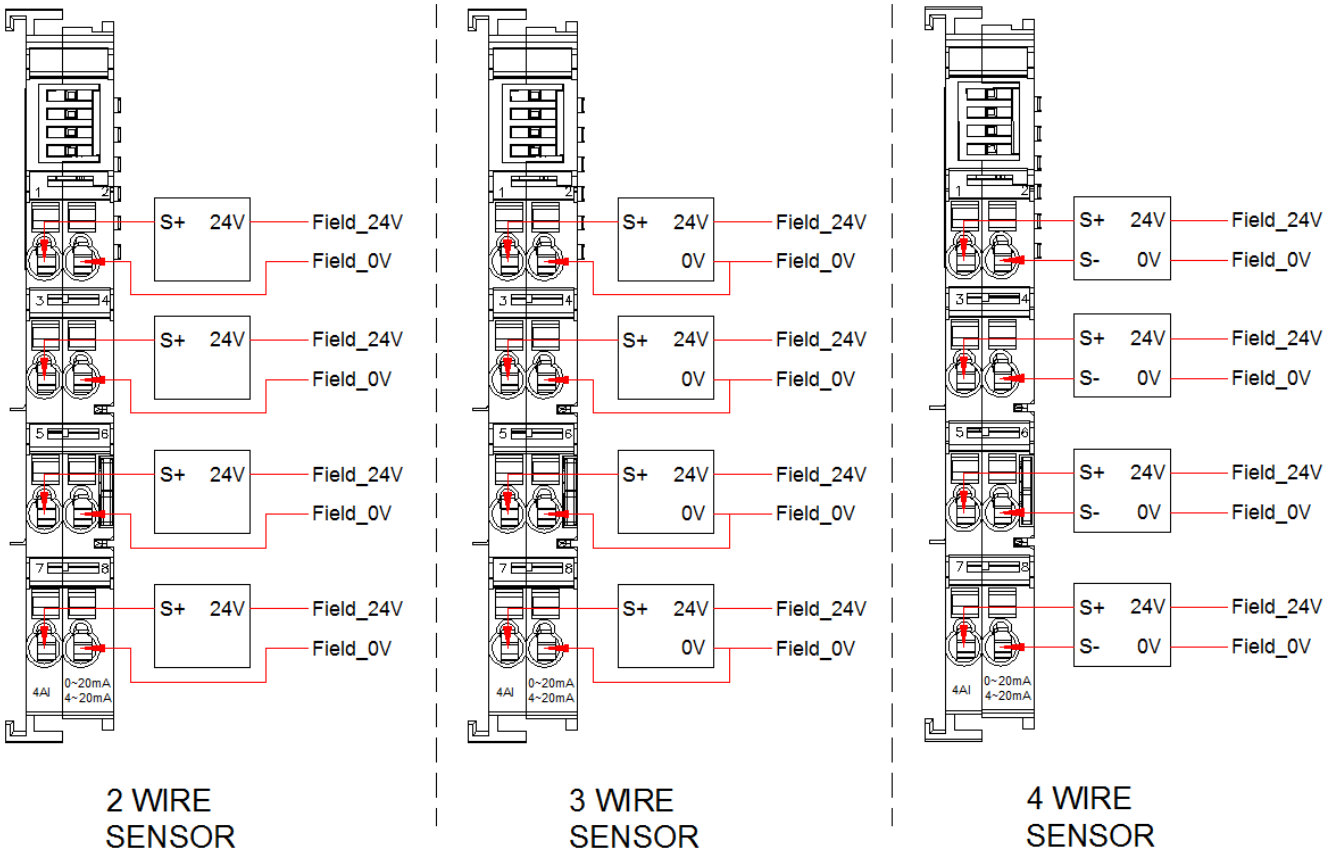
No.	Signal	Description
1	AI 1+	Current input channel1
2	AI 1-	
3	AI 2+	Current input channel2
4	AI 2-	
5	AI 3+	Current input channel3
6	AI 3-	
7	AI 4+	Current input channel4
8	AI 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

- **DF20-M-4AI-I-5 Module process data definition**

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Uint16
Byte 7									

Data description:

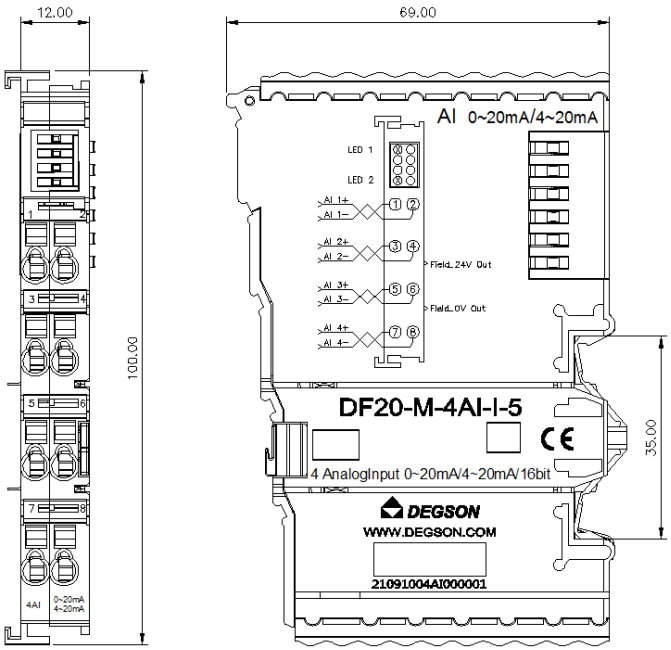
Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4AI-I-5）						
(Profinet/Ethernet IP)			**Other**			
（0~20mA）	（4~20mA）	Decimal	（0~20mA）	（4~20mA）	Decimal	
>23.515	>22.810	32767	/	/	/	Overflow
23.515 … … 20.0007	22.81 … … 20.0005	32511 … … 27649	/	/	/	Exceed the upper limit
20 … … 0	20 … … 4	27648 … … 0	20 … … 0	20 … … 4	65535 … … 0	Rated range
<0.0 … … …	3.9995 … … 1.1852	-1 … … -4864	/	/	/	Exceed the lower limit
/	<1.1852	-32768	/	/	/	Underflow

4.Machinery installation

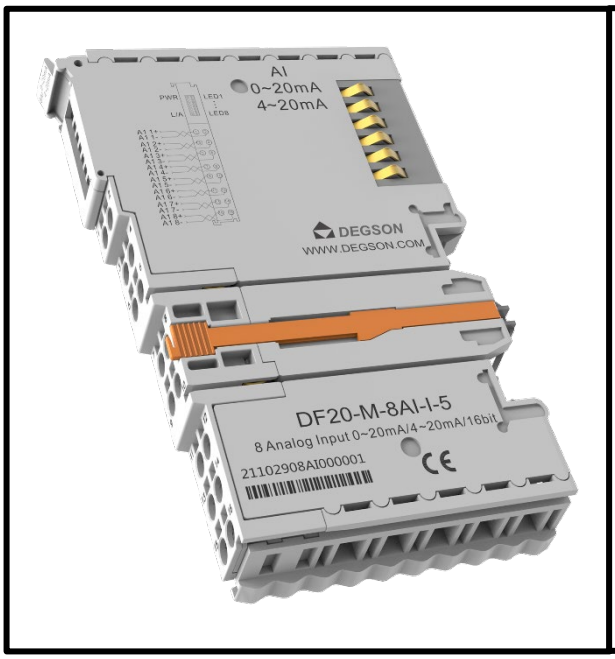
● Dimension drawing

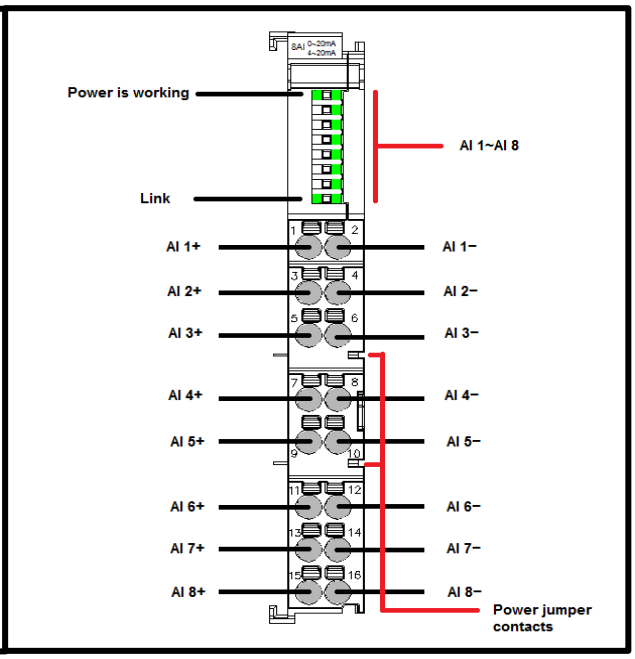
The installation size is shown in the following figure (unit: mm):



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

- This analog input module processes standard 0～20mA ,4～20mA signals.
- 8 channel Analog input , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each input channel has an LED indicator light.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.



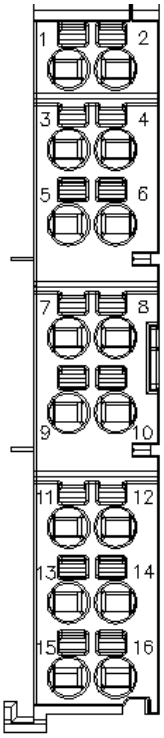


1.Specification

Technical data	
Number of channels	8
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.20%/±50ppm/K max.
Data size	16 Byte
Measuring range	current（0～20mA/4～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～20mA/4～20mA) 0～27648
Measuring range(Others)	(0～20mA/4～20mA) 0～65535
Sampling rate	20～300Hz（Configuration）
Conversion time	<1ms
Internal Resistance	100Ω
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	10 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

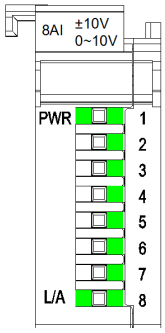
2.Hardware Interface

- **Wiring Terminal**



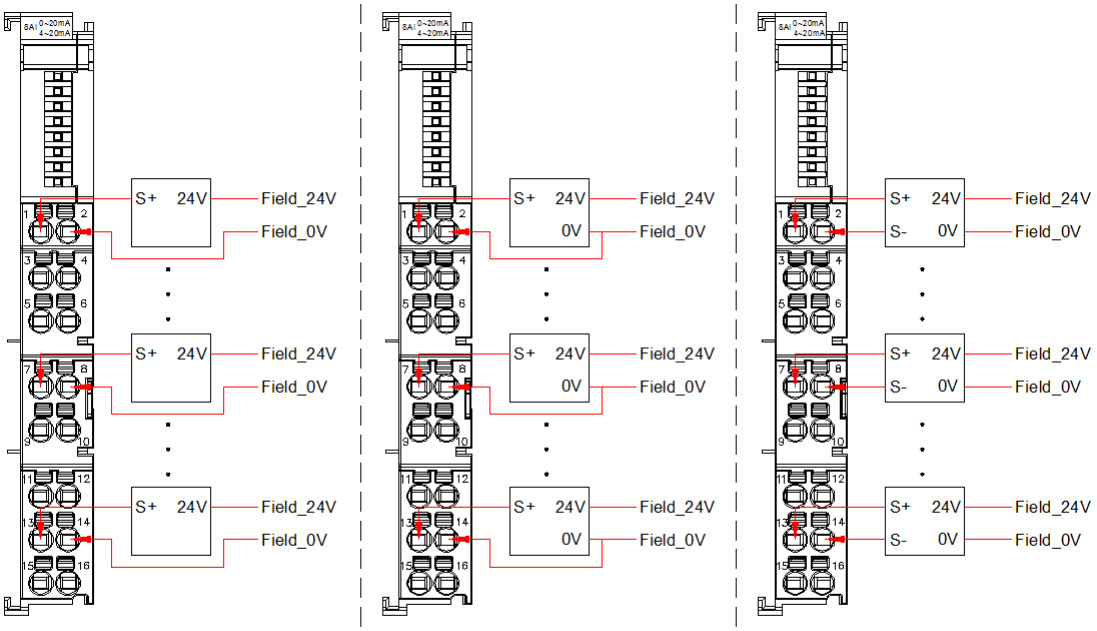
No.		Signal		Description
1	2	AI 1+	AI 1-	Current input channel1
3	4	AI 2+	AI 2-	Current input channel2
5	6	AI 3+	AI 3-	Current input channel3
7	8	AI 4+	AI 4-	Current input channel4
9	10	AI 5+	AI 5-	Current input channel5
11	12	AI 6+	AI 6-	Current input channel6
13	14	AI 7+	AI 7-	Current input channel7
15	16	AI 8+	AI 8-	Current input channel8

LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
2	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
3	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
4	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
5	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
6	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
7	Green:ON		Input signal invalid
	Green:OFF		Input signal valid
8	Green:ON		Input signal invalid
	Green:OFF		Input signal valid

- **Wiring**



3.Process data definition

DF20-M-8AI-I-5 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Uint16
Byte 7									
Byte 8	Analog Input Data(Channel 5)								Uint16
Byte 9									
Byte 10	Analog Input Data(Channel 6)								Uint16
Byte 11									
Byte 12	Analog Input Data(Channel 7)								Uint16
Byte 13									
Byte 14	Analog Input Data(Channel 8)								Uint16
Byte 15									

Data description:

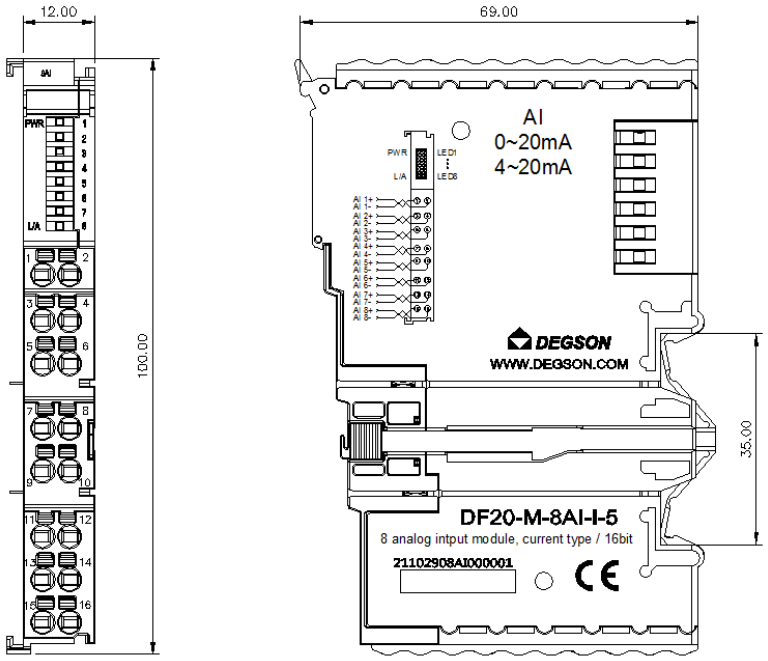
Analog Input Data(Channel 1~8)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-8AI-I-5）						
(Profinet/Ethernet IP)			Other			
（0~20mA）	（4~20mA）	Decimal	（0~20mA）	（4~20mA）	Decimal	
>23.515	>22.810	32767	/	/	/	Overflow
23.515 … … 20.0007	22.81 … … 20.0005	32511 … … 27649	/	/	/	Exceed the upper limit
20 … … 0	20 … … 4	27648 … … 0	20 … … 0	20 … … 4	65535 … … 0	Rated range
/	3.9995 … … 1.1852	-1 … … -4864	/	/	/	Exceed the lower limit
/	<1.1852	-32768	/	/	/	Underflow

4.Machinery installation

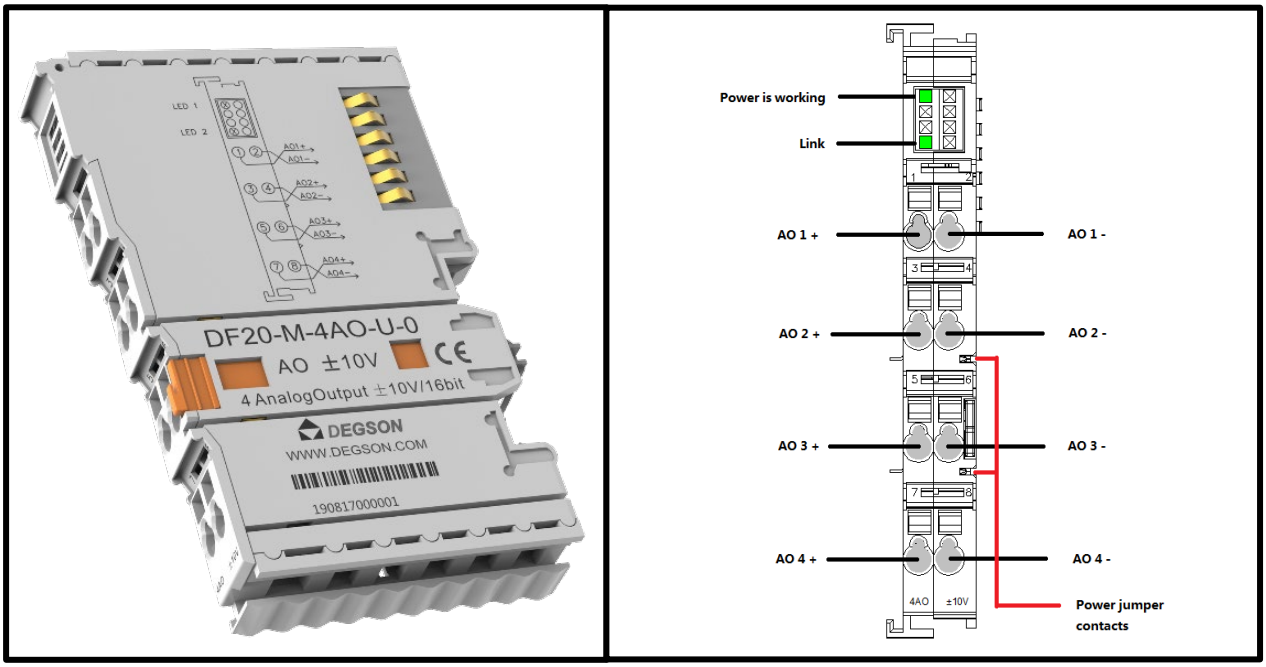
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- This analog output module generates standard ±10V signals.
- 4 channel Analog output , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

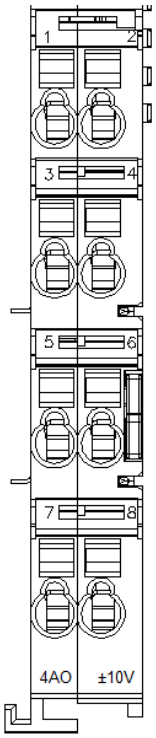


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	voltage（±10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(-10～10V)-27648～27648
Measuring range(Others)	(-10～10V)-32768～32767
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	>2KΩ
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

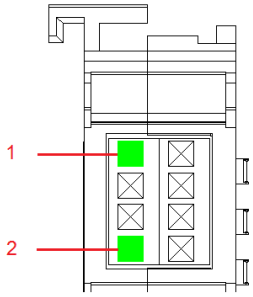
2.Hardware Interface

- **Wiring Terminal**



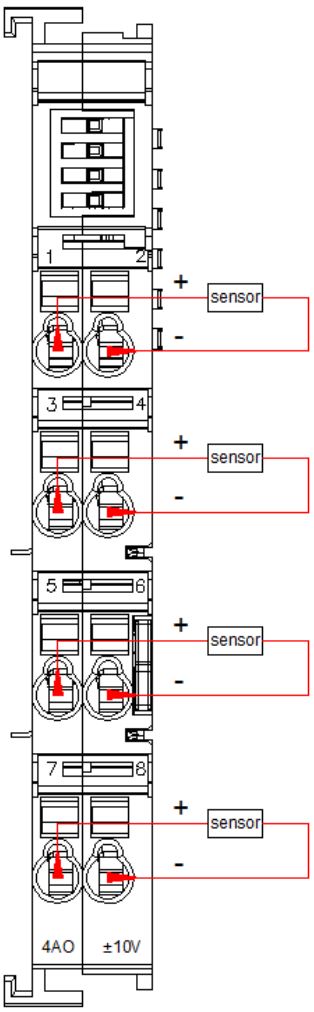
No.	Signal	Description
1	AO 1+	Voltage output channel1
2	AO 1-	
3	AO 2+	Voltage output channel2
4	AO 2-	
5	AO 3+	Voltage output channel3
6	AO 3-	
7	AO 4+	Voltage output channel4
8	AO 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AO-U-0 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Int16
Byte 7									

Data description:

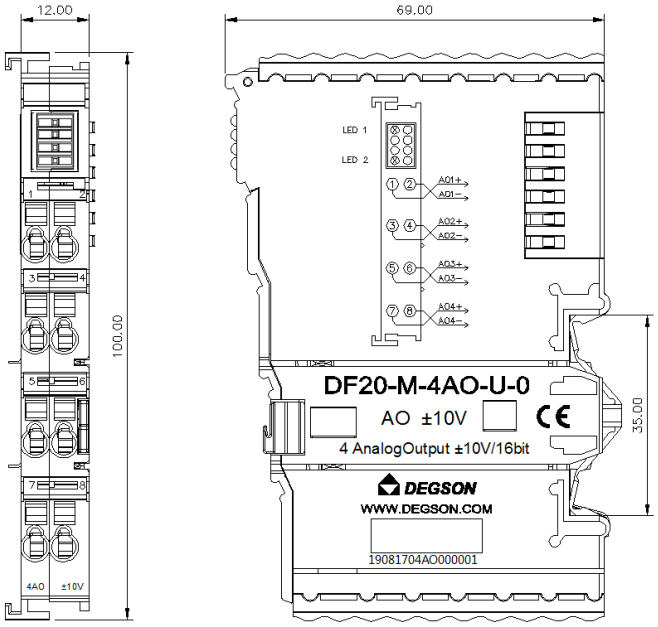
Analog Output Data(Channel 1~4)：Analog signal Output value of corresponding channel.

Analog Output Data（DF20-M-4AO-U-0）				
(Profinet/Ethernet IP)		**Other**		
（-10V~10V）	Decimal	（-10V~10V）	Decimal	
10	27648	10	32767	Rated range
…	…	…	…	
…	…	…	…	
-10	-27648	-10	-32768	

4.Machinery installation

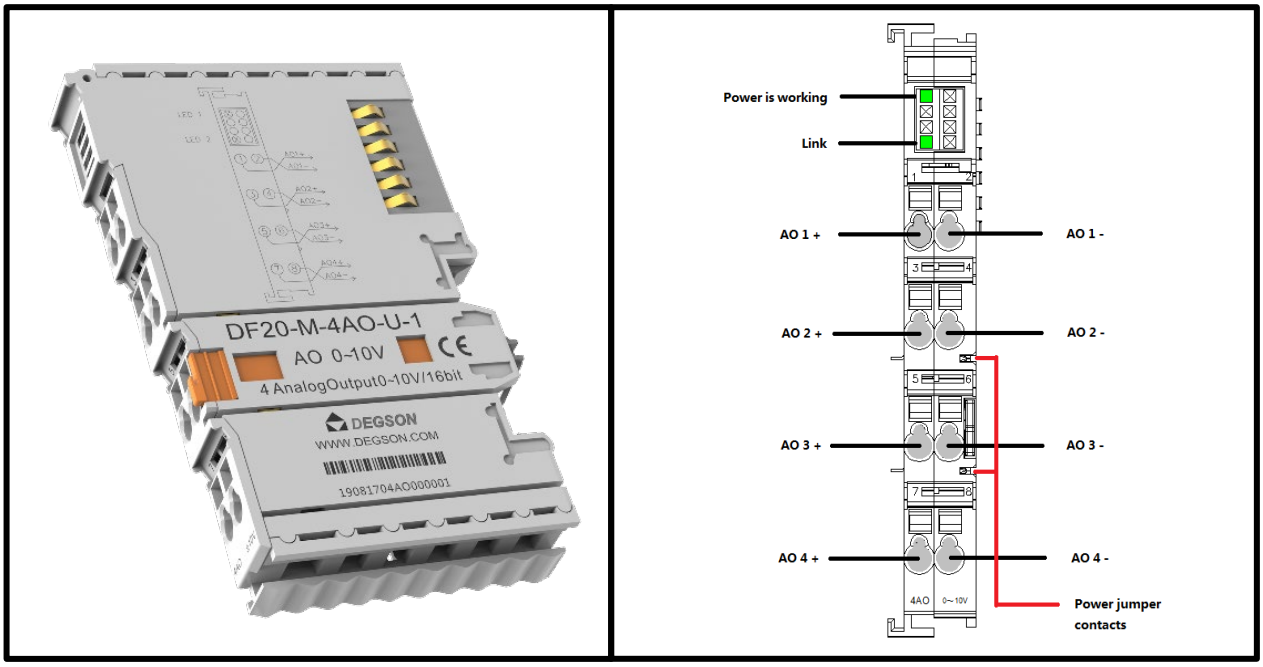
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- This analog output module generates standard 0～10 V signals.
- 4 channel Analog output , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

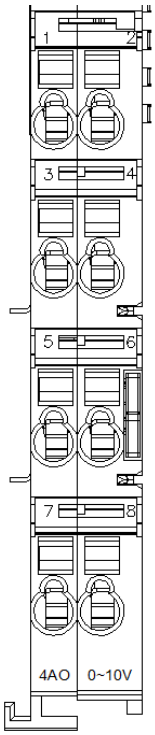


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	voltage（0～10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～10V)0～27648
Measuring range(Others)	(0～10V)0～65535
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	>2KΩ
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

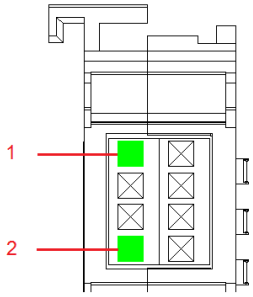
2.Hardware Interface

- **Wiring Terminal**



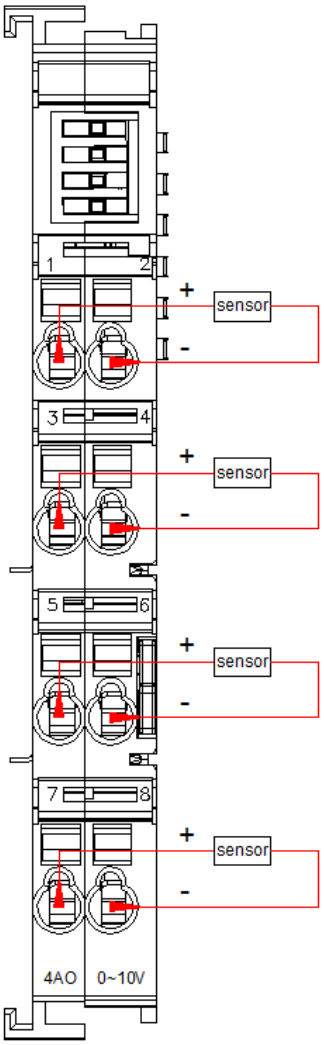
No.	Signal	Description
1	AO 1+	Voltage output channel1
2	AO 1-	
3	AO 2+	Voltage output channel2
4	AO 2-	
5	AO 3+	Voltage output channel3
6	AO 3-	
7	AO 4+	Voltage output channel4
8	AO 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AO-U-1 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Int16
Byte 7									

Data description:

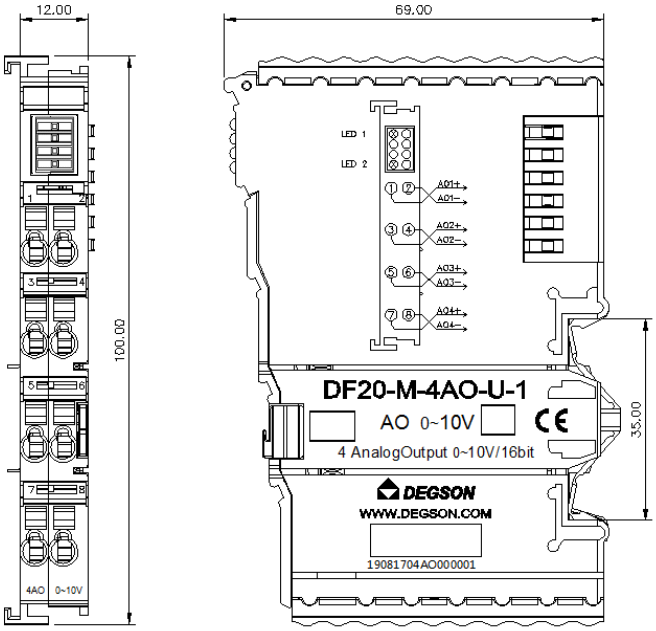
Analog Output Data(Channel 1~4)：Analog signal Output value of corresponding channel.

Analog Output Data（DF20-M-4AO-U-1）				
(Profinet/Ethernet IP)		**Other**		
（0V~10V）	Decimal	（0V~10V）	Decimal	
10 … … 0	27648 … … 0	10 … … 0	32767 … … 0	Rated range

4.Machinery installation

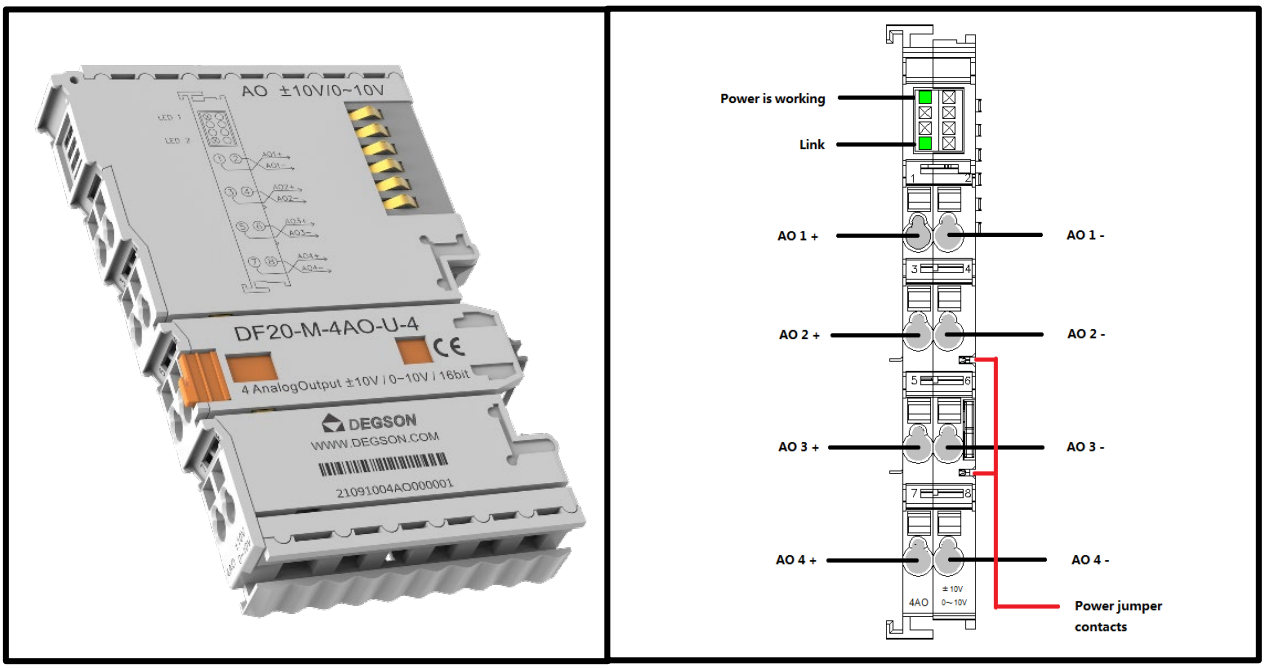
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 4 channel Analog output /voltage type /±10V，0～10V (DF20-M-4AO-U-4)

- This analog output module generates standard ±10V，0～10V signals.
- 4 channel Analog output , voltage type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

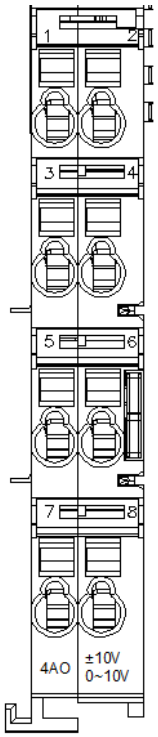


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	voltage（±10V,0～10V）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～10V) 0～27648 (-10V～10V) -27648～27648
Measuring range(Others)	(0～10V) 0～32767 (-10V～10V) -32768～32767
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	>2KΩ
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

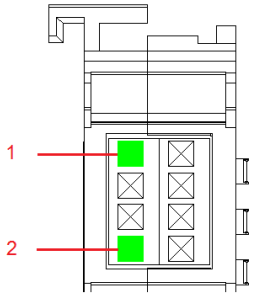
2.Hardware Interface

- **Wiring Terminal**



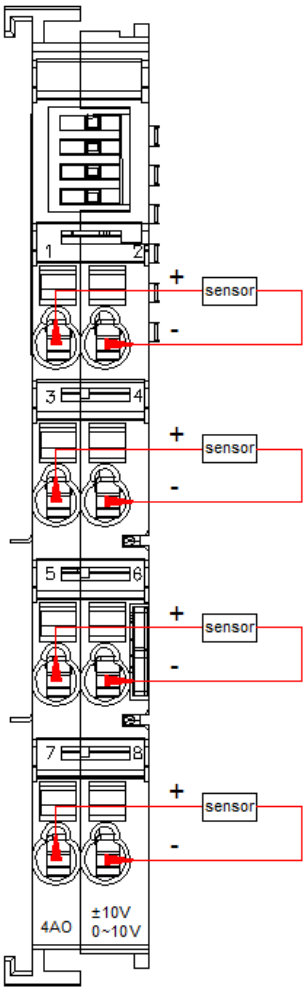
No.	Signal	Description
1	AO 1+	Voltage output channel1
2	AO 1-	
3	AO 2+	Voltage output channel2
4	AO 2-	
5	AO 3+	Voltage output channel3
6	AO 3-	
7	AO 4+	Voltage output channel4
8	AO 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AO-U-4 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Int16
Byte 7									

Data description:

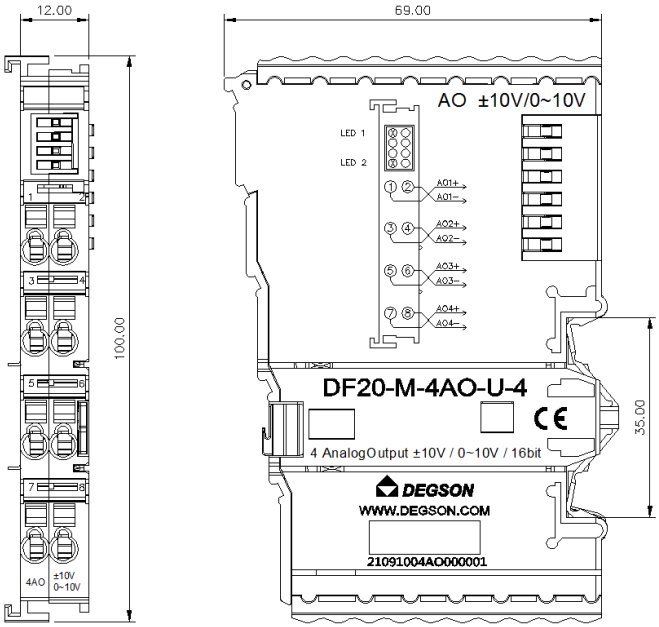
Analog Output Data(Channel 1~4)：Analog signal output value of corresponding channel.

Analog Output Data（DF20-M-4AO-U-4）								
(Profinet/Ethernet IP)				**Other**				
（-10V~10V）	Decimal	（0V~10V）	Decimal	（-10V~10V）	Decimal	（0V~10V）	Decimal	
10	27648	10	27648	10	32767	10	32767	Rated range
…	…	…	…	…	…	…	…	
…	…	…	…	…	…	…	…	
-10	-27648	0	0	-10	-32768	0	0	

4.Machinery installation

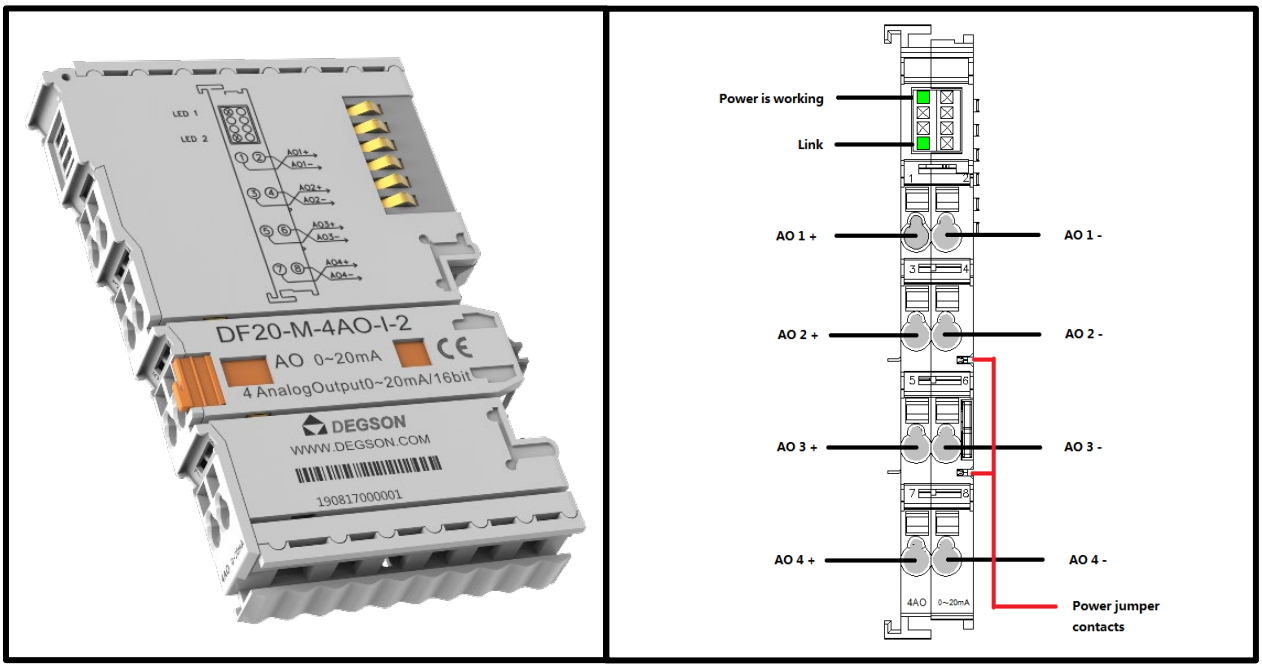
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 4 channel Analog output /current type /0～20mA (DF20-M-4AO-I-2)

- This analog output module generates standard 0～20mA signals.
- 4 channel Analog output , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

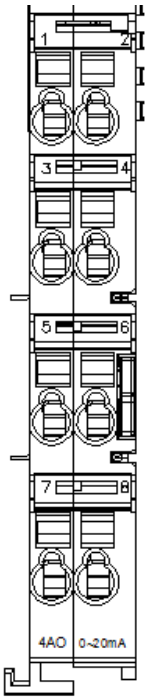


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	current（0～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<400mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～20mA)0～27648
Measuring range(Others)	(0～20mA)0～65535
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	<250Ω
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

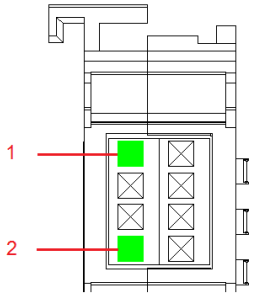
2.Hardware Interface

- **Wiring Terminal**



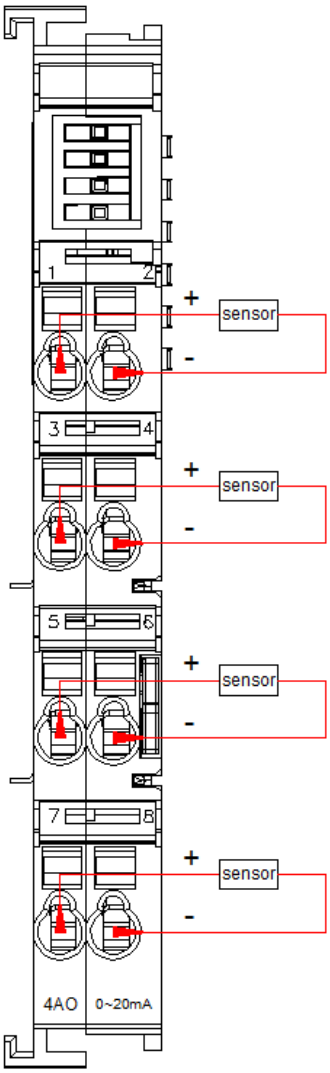
No.	Signal	Description
1	AO 1+	Current output channel1
2	AO 1-	
3	AO 2+	Current output channel2
4	AO 2-	
5	AO 3+	Current output channel3
6	AO 3-	
7	AO 4+	Current output channel4
8	AO 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AO-I-2 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Uint16
Byte 7									

Data description:

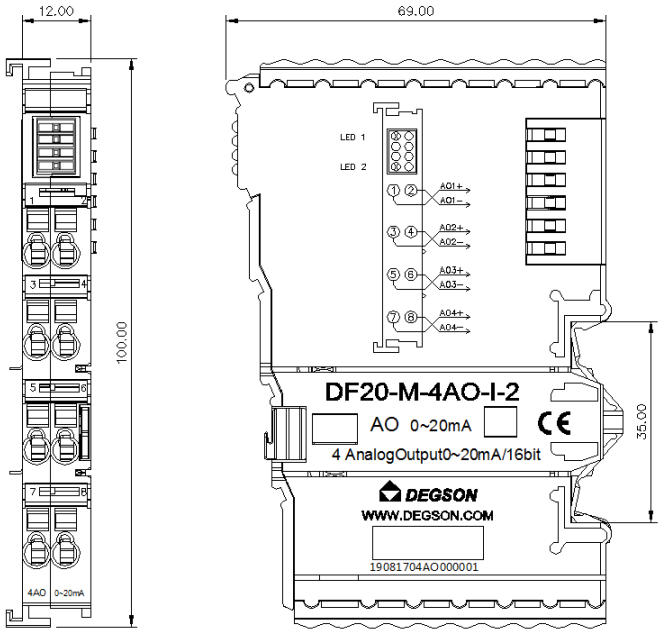
Analog Output Data(Channel 1~4)：Analog signal Output value of corresponding channel.

Analog Output Data（DF20-M-4AO-I-2）				
(Profinet/Ethernet IP)		**Other**		
（0~20mA）	Decimal	（0~20mA）	Decimal	
20 … … 0	27648 … … 0	20 … … 0	65535 … … 0	Rated range

4.Machinery installation

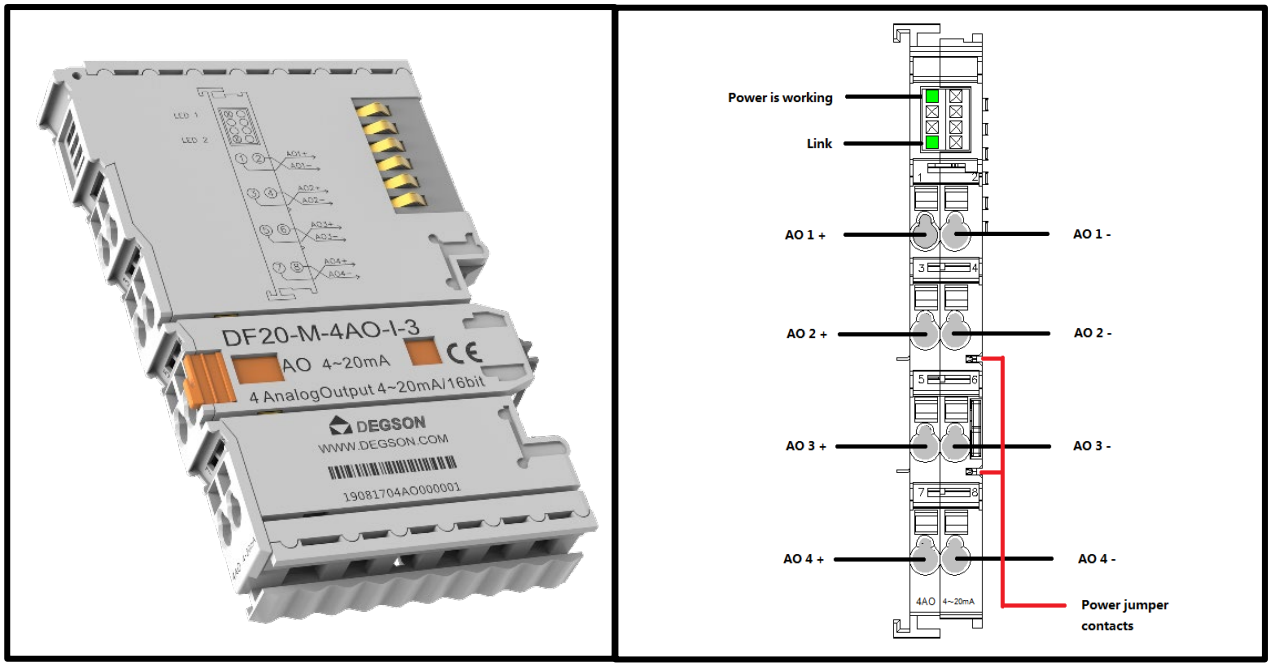
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 4 channel Analog output /current type /4～20mA (DF20-M-4AO-I-3)

- This analog output module generates standard 4～20mA signals.
- 4 channel Analog output , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

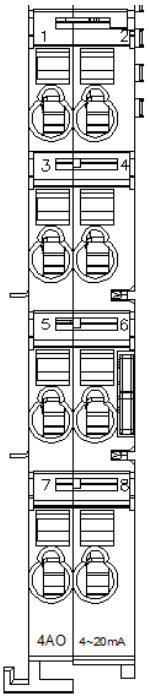


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	current（4～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<400mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(4～20mA)0～27648
Measuring range(Others)	(4～20mA)0～65535
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	<250Ω
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

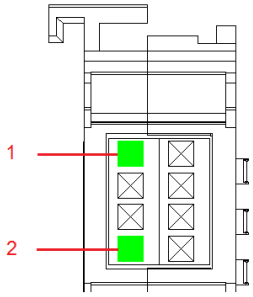
2.Hardware Interface

● Wiring Terminal



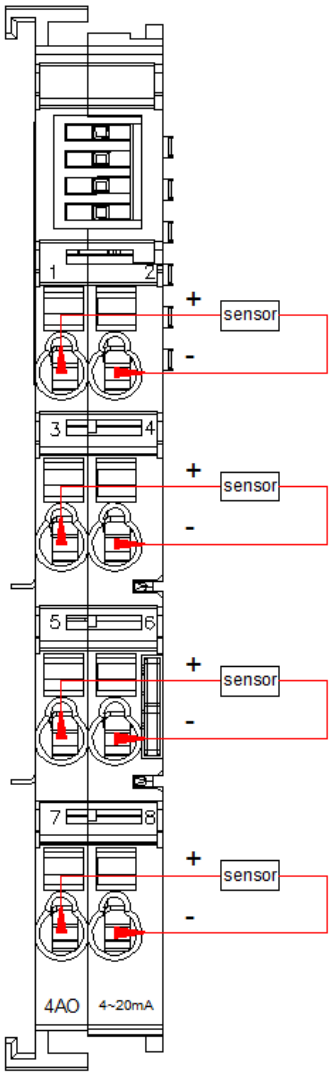
No.	Signal	Description
1	AO 1+	Current output channel1
2	AO 1-	
3	AO 2+	Current output channel2
4	AO 2-	
5	AO 3+	Current output channel3
6	AO 3-	
7	AO 4+	Current output channel4
8	AO 4-	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



3.Process data definition

DF20-M-4AO-I-3 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Uint16
Byte 7									

Data description:

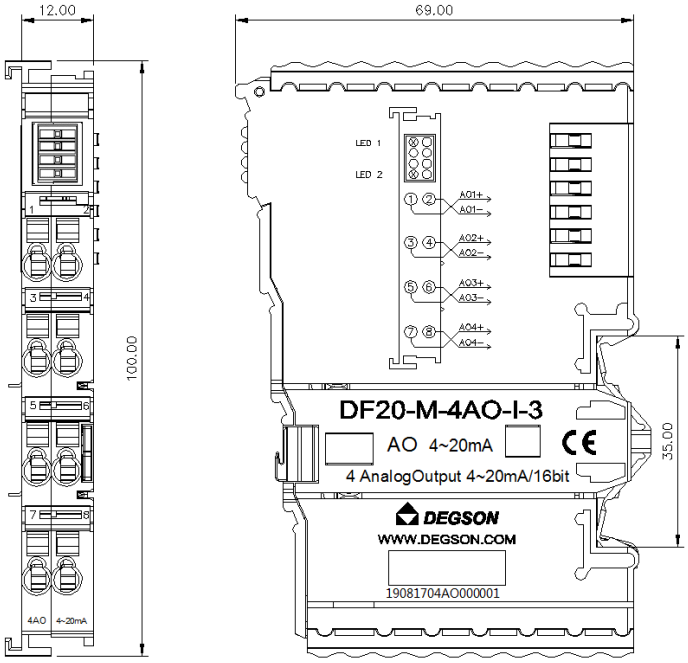
Analog Output Data(Channel 1~4)：Analog signal Output value of corresponding channel.

Analog Output Data（DF20-M-4AO-I-3）				
(Profinet/Ethernet IP)		**Other**		
（4~20mA）	Decimal	（4~20mA）	Decimal	
20 … … 4	27648 … … 0	20 … … 4	65535 … … 0	Rated range

4.Machinery installation

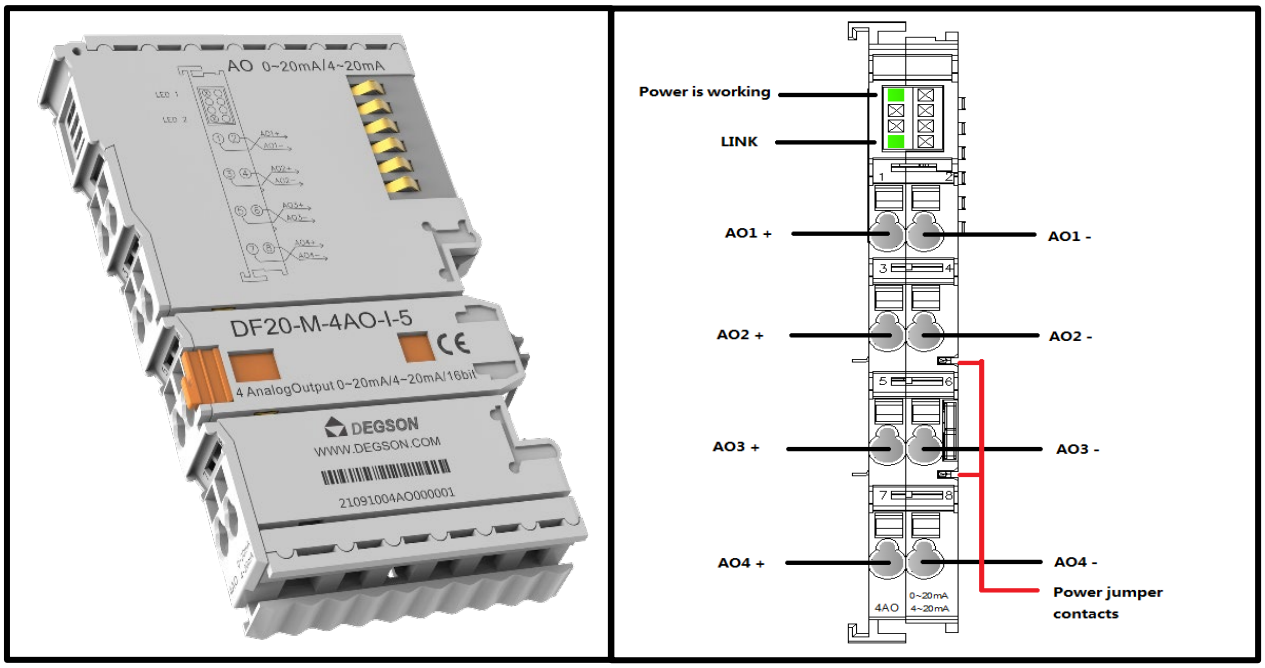
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- This analog output module generates standard 0～20mA,4～20mA signals.
- 4 channel Analog output , current type .
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

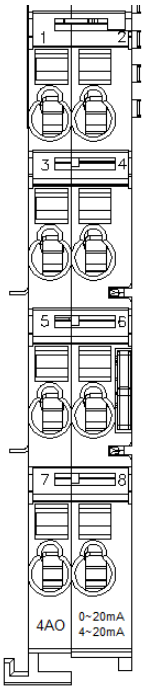


1.Specification

Technical data	
Number of channels	4
Signal type	Differential signal
Input signal voltage	24VDC
Connection type	2-line
Resolution [bit]	16 Bit
Precision	0.10%
Data size	8 Byte
Measuring range	current（0～20mA/4～20mA）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<400mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Measuring range（Profinet/Ethernet IP）	(0～20mA/4～20mA)0～27648
Measuring range(Others)	(0～20mA/4～20mA)0～65535
Temperature coefficient	<20ppm
Conversion time	≤1ms
Load impedance	<250Ω
Fault diagnosis	Yes
Overcurrent protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

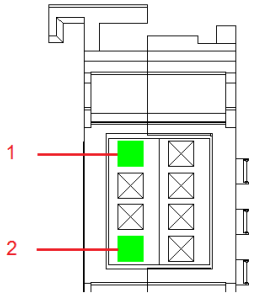
2.Hardware Interface

- **Wiring Terminal**



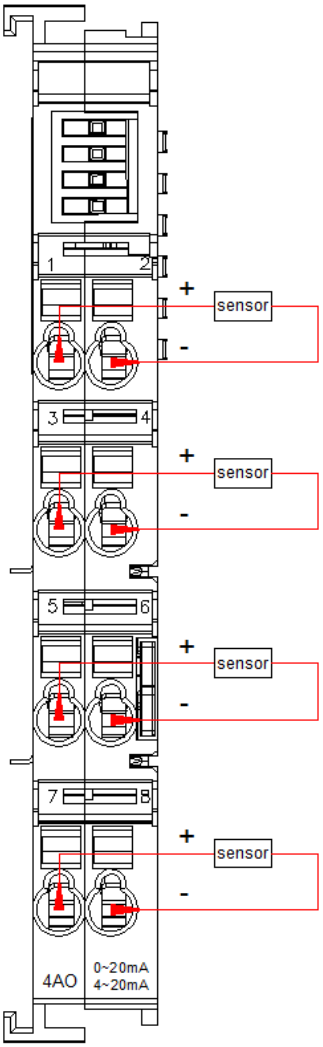
No.	Signal	Description
1	AO 1+	Current output channel1
2	AO 1-	
3	AO 2+	Current output channel2
4	AO 2-	
5	AO 3+	Current output channel3
6	AO 3-	
7	AO 4+	Current output channel4
8	AO 4-	

● LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

● Wiring



3.Process data definition

DF20-M-4AO-I-5 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Output Data(Channel 1)								Uint16
Byte 1									
Byte 2	Analog Output Data(Channel 2)								Uint16
Byte 3									
Byte 4	Analog Output Data(Channel 3)								Uint16
Byte 5									
Byte 6	Analog Output Data(Channel 4)								Uint16
Byte 7									

Data description:

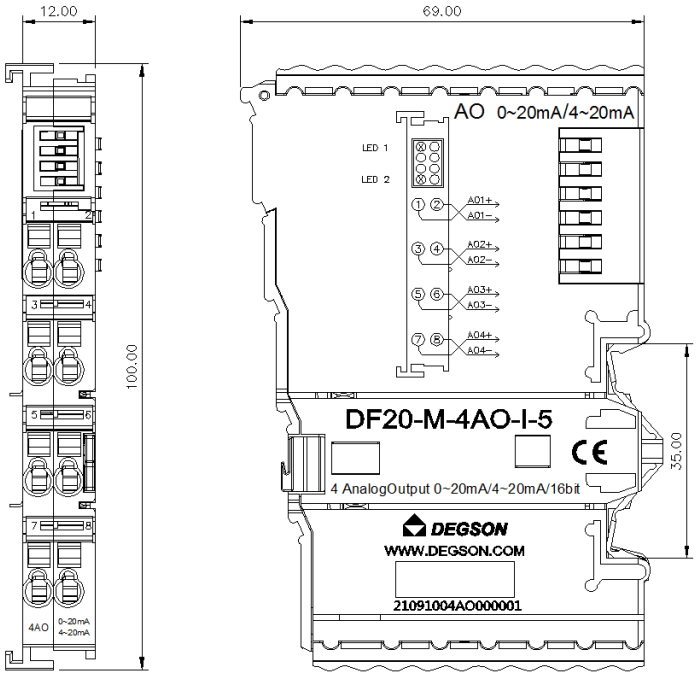
Analog Output Data(Channel 1~4)：Analog signal Output value of corresponding channel.

Analog Output Data（DF20-M-4AO-I-5）						
(Profinet/Ethernet IP)			**Other**			
（0~20mA）	（4~20mA）	Decimal	（0~20mA）	（4~20mA）	Decimal	
20	20	27648	20	20	65535	Rated range
…	…	…	…	…	…	
…	…	…	…	…	…	
0	4	0	0	4	0	

4.Machinery installation

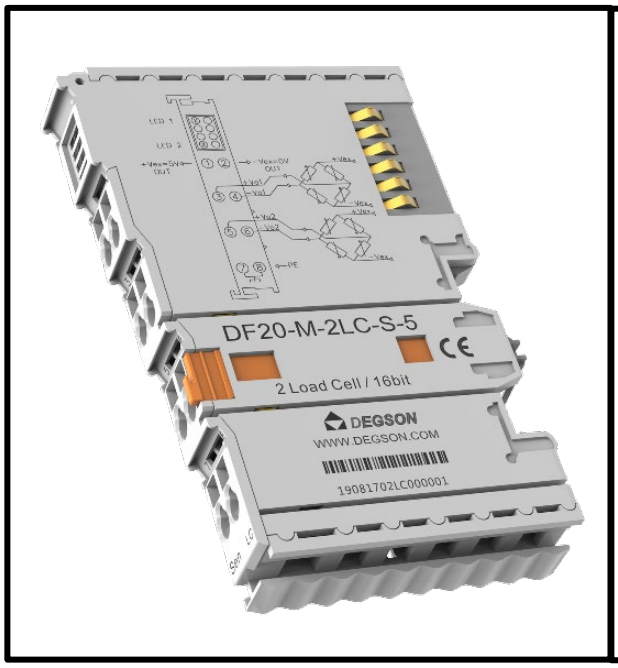
● Dimension drawing

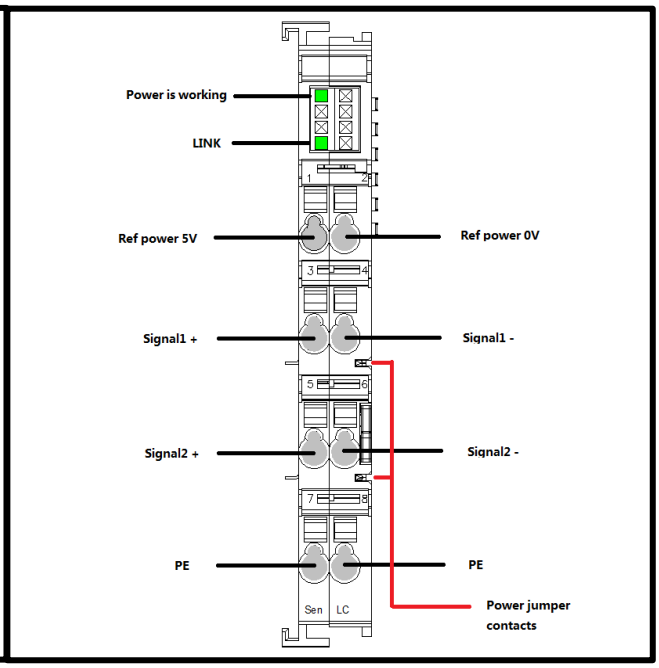
The installation size is shown in the following figure (unit: mm):



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

- The pressure measurement measuring range 0～10mV.
- 2 channel pressure measurement.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.



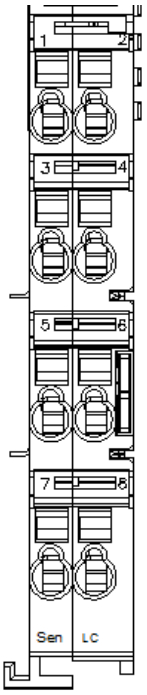


1.Specification

Technical data	
Number of channels	2
Signal type	Load CellBridge, pressure sensor, Load Cell
Connection type	4-line
Resolution [bit]	16 Bit
Precision	0.20%
Data size	8 Byte
Measuring range	0～10mV（0～32767）
Supply voltage (system)	5VDC；via data contacts
Current consumption	<210mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Frequency interference suppression	10Hz | 50Hz | 60Hz | 400Hz
Conversion time	3.3ms
Internal Resistance	>500KΩ
Fault diagnosis	Yes
Diagnosis	Parameter assignment error
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

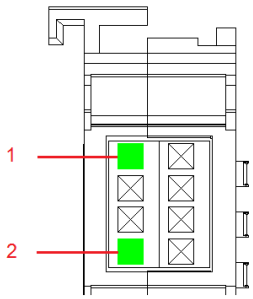
2.Hardware Interface

● Wiring Terminal



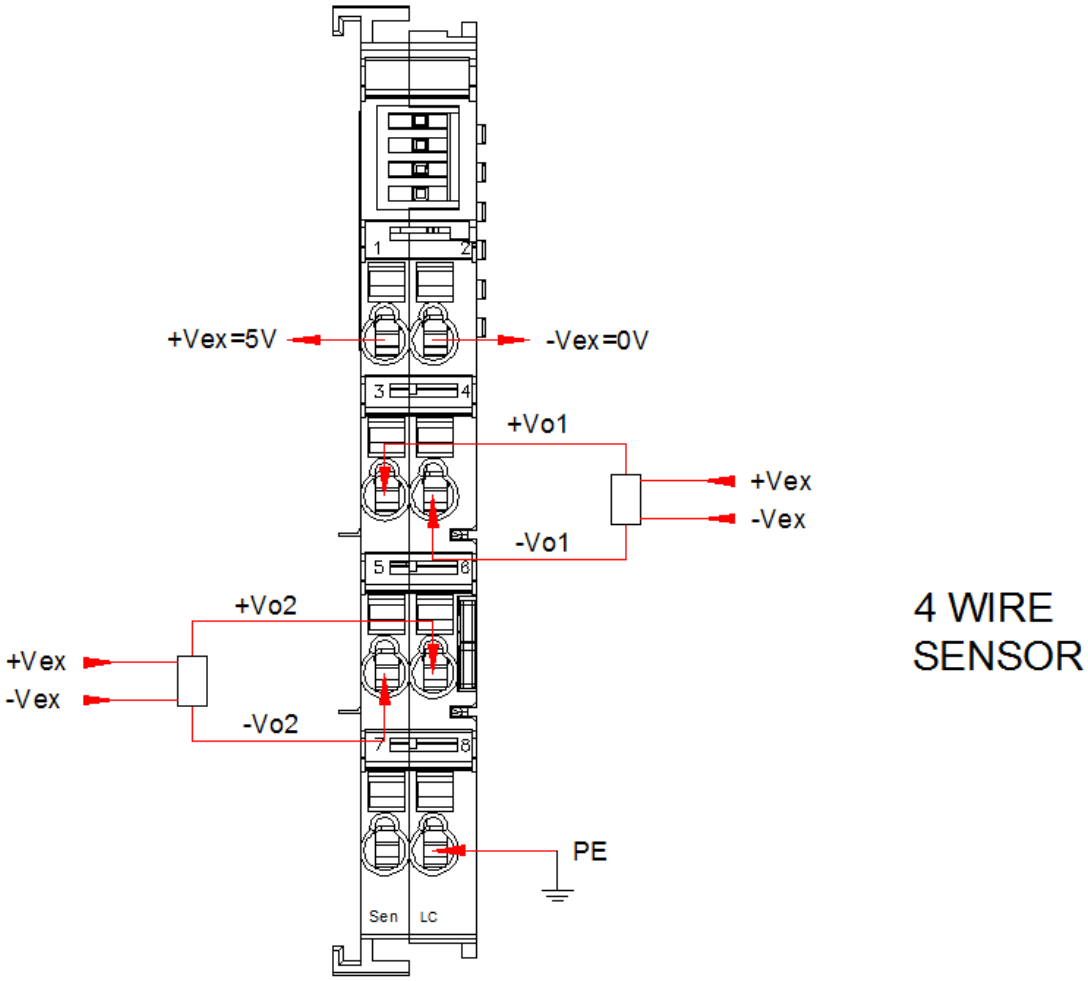
No.	Signal	Description
1	Ref power 5V	Supply voltage to bridge and pressure sensor
2	Ref power 0V	
3	Signal 1+	Measurement channel1
4	Signal 1-	
5	Signal 2+	Measurement channel 2
6	Signal 2-	
7	PE	Protect Earthing
8	PE	

● LED Indicator



LED Indicator	State	Definition
1	Green:ON	Power Normal
	Green:OFF	Power Failure
2	Green:Flash	The module runs normally
	Green:OFF	Module operating fault

Wiring


+Vex=5V
-Vex=0V
+Vo1
+Vex
-Vex
-Vo1
+Vo2
+Vex
-Vex
-Vo2
PE
Sen
LC
4 WIRE
SENSOR

3.Process data definition

DF20-M-2LC-S-5 Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									

Data description:

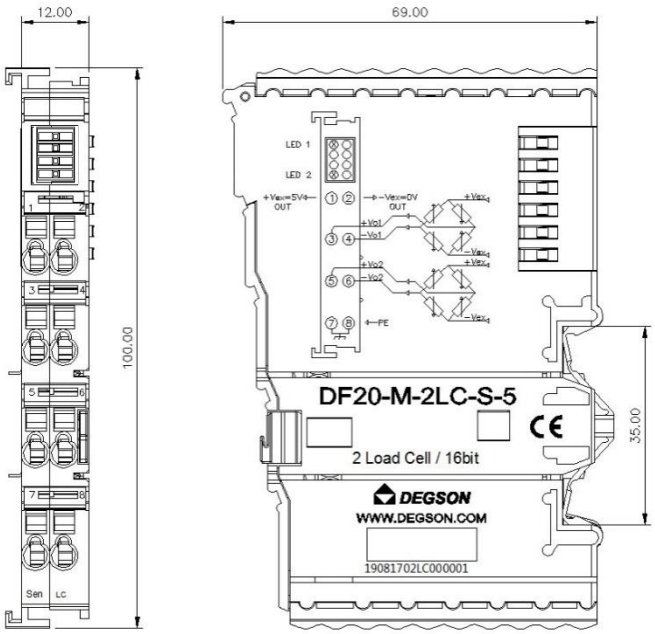
Analog Input Data(Channel 1~2)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-2LC-S-5）		
Voltage （0~10mV）	Weight	Decimal
10	5KG	32767
…	…	…
…	…	…
0	0	0

4.Machinery installation

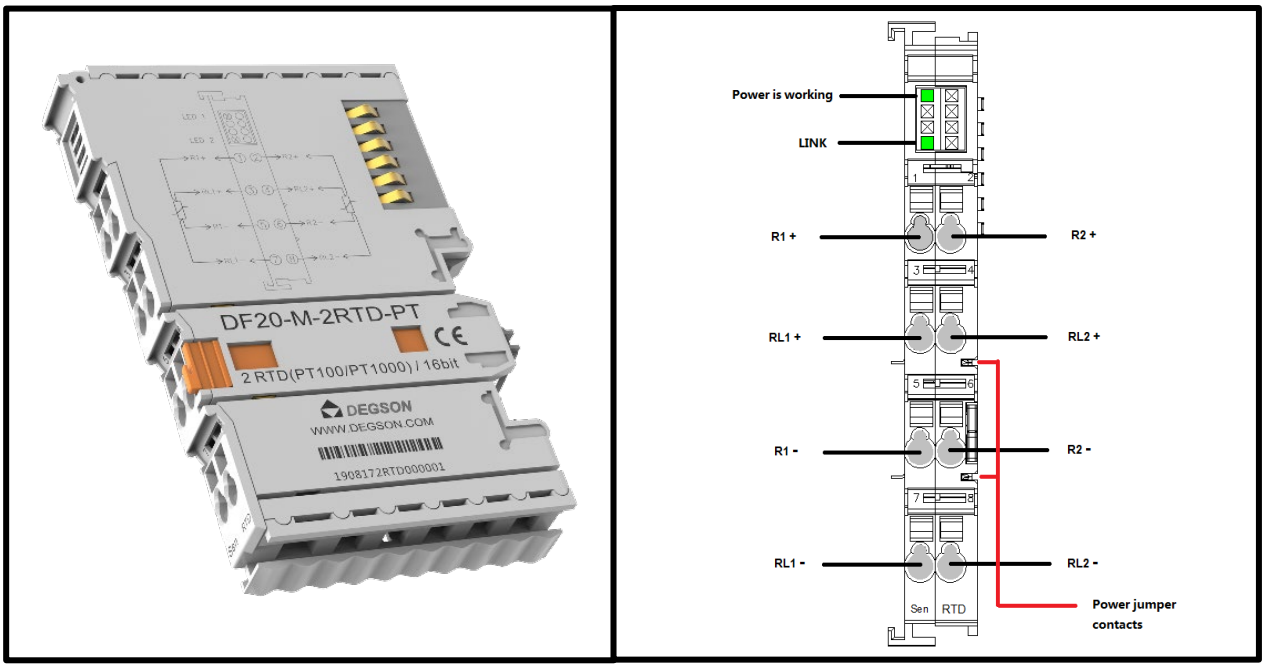
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



◆ 2 channel RTD measurement /RT100、RT1000(DF20-M-2RTD-PT)

- The module supports 2-channel RTD thermal resistance temperature acquisition, supports 13 kind of conventional resistance temperature measurement type.
- The module could be connected to a 2-wire or 3-wire or 4-wire (PT100、PT1000) temperature sensor.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each channel is equipped with an LED indicator.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

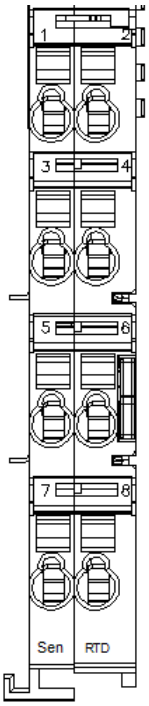


1.Specification

Technical data	
Number of channels	2
Signal type	Thermal resistance
Signal type	PT100、PT200、PT500、PT1000、NI100、NI200、NI500、NI1000、NI120、CU10、CU50、CU100、CU53、KTY84
Connection type	2/3/4-line
Resolution [bit]	16 Bit，0.1℃/each number
Precision	±0.3%
Data size	4 Byte
Temperature coefficient	±50ppm/Kmax.
Measuring range	-200℃～850℃
Supply voltage (system)	5VDC；via data contacts
Current consumption	<60mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Frequency interference suppression	10Hz | 50Hz | 60Hz | 400Hz
Conversion time	150ms
Fault diagnosis	Yes
Diagnosis	Disconnection, Parameter assignment error
Process alarm	Upper/Lower limit, per channel
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

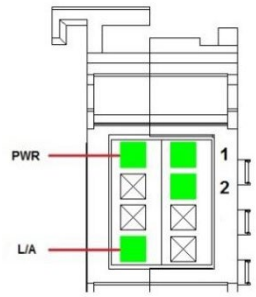
2.Hardware Interface

- **Wiring Terminal**



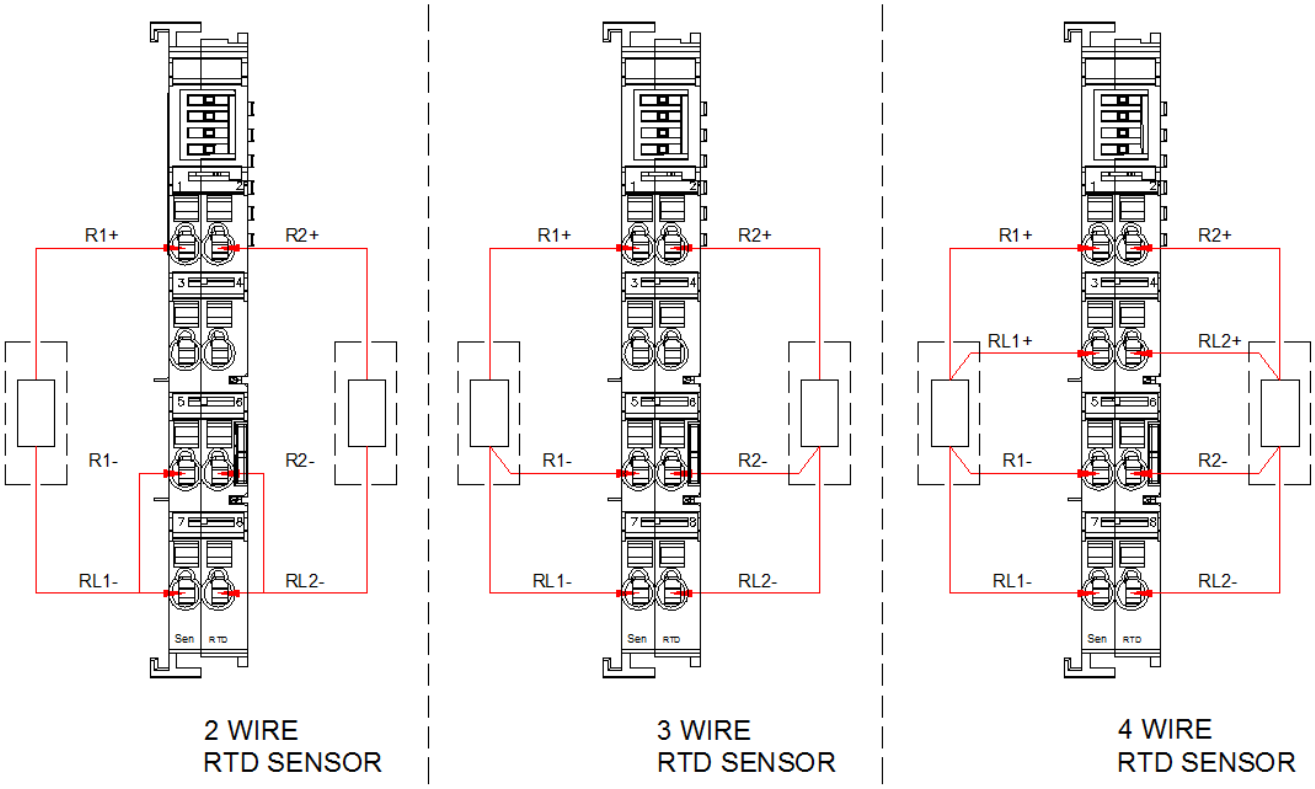
No.	Signal	Description
1	R1 +	Signal Input CH 1
3	RL1 +	
5	R1 -	
7	RL1 -	
2	R2 +	Signal Input CH 2
4	RL2 +	
6	R2 -	
8	RL2 -	

LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
2	Green:Flash		CH 2 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection

● Wiring



As shown in the picture:

Take the connection method of one channel on the module as an example. The other channels are connected in the same way

（1）4-wire sensor：Ports 1, 3, 5 and 7 are respectively connected to the excitation power supply +, signal +, excitation power supply - and signal - of the sensor

（2）3-wire sensor：Connect to ports 1, 5 and 7.

（3）2-wire sensor：Connect ports 1 and 5 (5 and 7 are short-circuited).

3.Process data definition

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

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									

Data description:

Analog Input Data(Channel 1~2)：Analog signal Input value of corresponding channel.

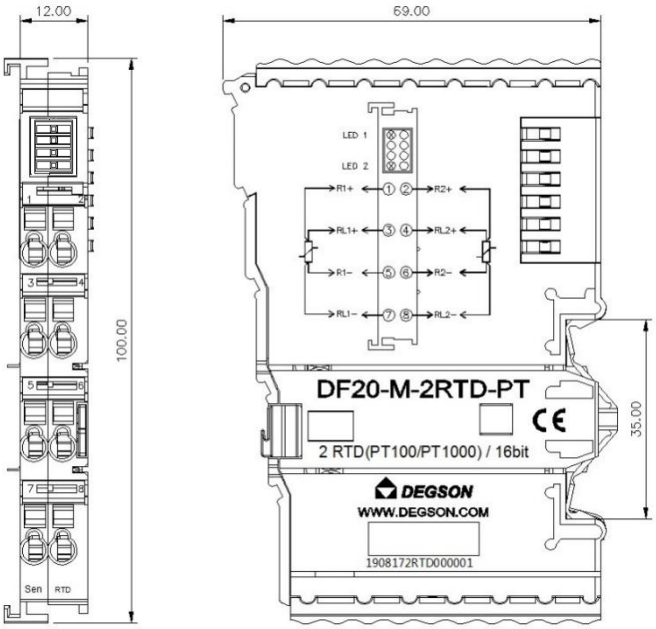
Analog Input Data（DF20-M-2RTD-PT）——PT100/PT200/PT500		
Temperature (℃)	Decimal	
>860	32767	Exceeds the upper limit
860	8600	Overflow
850 … … -200	8500 … … -2000	Rated range
-210	-2100	Underflow
<-210	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——PT1000		
Temperature (℃)	Decimal	
>860	32767	Exceeds the upper limit
860	8600	Overflow
850 … … -200	8500 … … -2000	Rated range
-204	-2040	Underflow
<-204	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——NI100/NI200/NI500/NI1000		
Temperature (℃)	Decimal	
>254	32767	Exceeds the upper limit
254	2540	Overflow
250 … …	2500 … …	Rated range

-60	-600	
-64	-640	Underflow
<-64	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——NI120		
Temperature (℃)	Decimal	
>313	32767	Exceeds the upper limit
313	3130	Overflow
309 … … -79	3090 … … -790	Rated range
-83	-830	Underflow
<-83	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——CU10/CU50/CU100		
Temperature (℃)	Decimal	
>163	32767	Exceeds the upper limit
163	1630	Overflow
159 … … -59	1590 … … -590	Rated range
-63	-630	Underflow
<-63	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——CU53		
Temperature (℃)	Decimal	
>154	32767	Exceeds the upper limit
154	1540	Overflow
150 … … -50	1500 … … -500	Rated range
-54	-540	Underflow
<-54	-32767	Exceeds the lower limit
Line break	-32768	Line break

4.Machinery installation

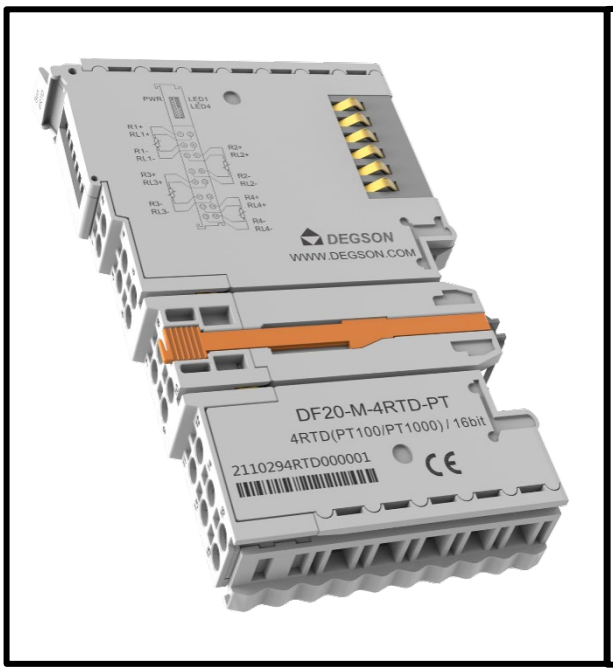
● Dimension drawing

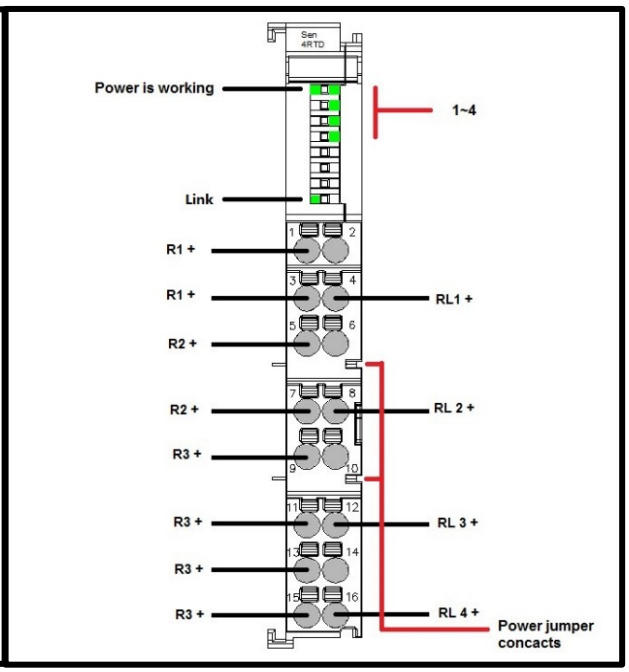
The installation size is shown in the following figure (unit: mm):



◆ 4 channel RTD measurement /RT100、RT1000(DF20-M-4RTD-PT)

- The module supports 4-channel RTD thermal resistance temperature acquisition, supports 13 kind of conventional resistance temperature measurement type.
- The module could be connected to a 2-wire or 3-wire (PT100、PT1000) temperature sensor.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each channel is equipped with an LED indicator.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.



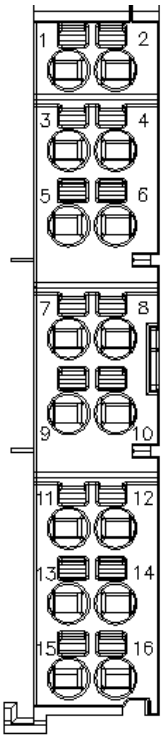


1.Specification

Technical data	
Number of channels	4
Signal type	Thermal resistance
Signal type	PT100、PT200、PT500、PT1000、NI100、NI200、NI500、NI1000、NI120、CU10、CU50、CU100、CU53、KTY84
Connection type	2/3-line
Resolution [bit]	16 Bit，0.1℃/each number
Precision	±0.3%
Data size	8 Byte
Temperature coefficient	±50ppm/Kmax.
Measuring range	-200℃～850℃
Supply voltage (system)	5VDC；via data contacts
Current consumption	<100mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Frequency interference suppression	10Hz | 50Hz | 60Hz | 400Hz
Conversion time	200ms
Fault diagnosis	Yes
Diagnosis	Disconnection, Parameter assignment error
Process alarm	Upper/Lower limit, per channel
Reverse protection	Yes
Indicators	6x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

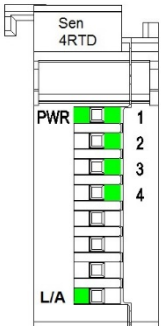
2.Hardware Interface

- **Wiring Terminal**



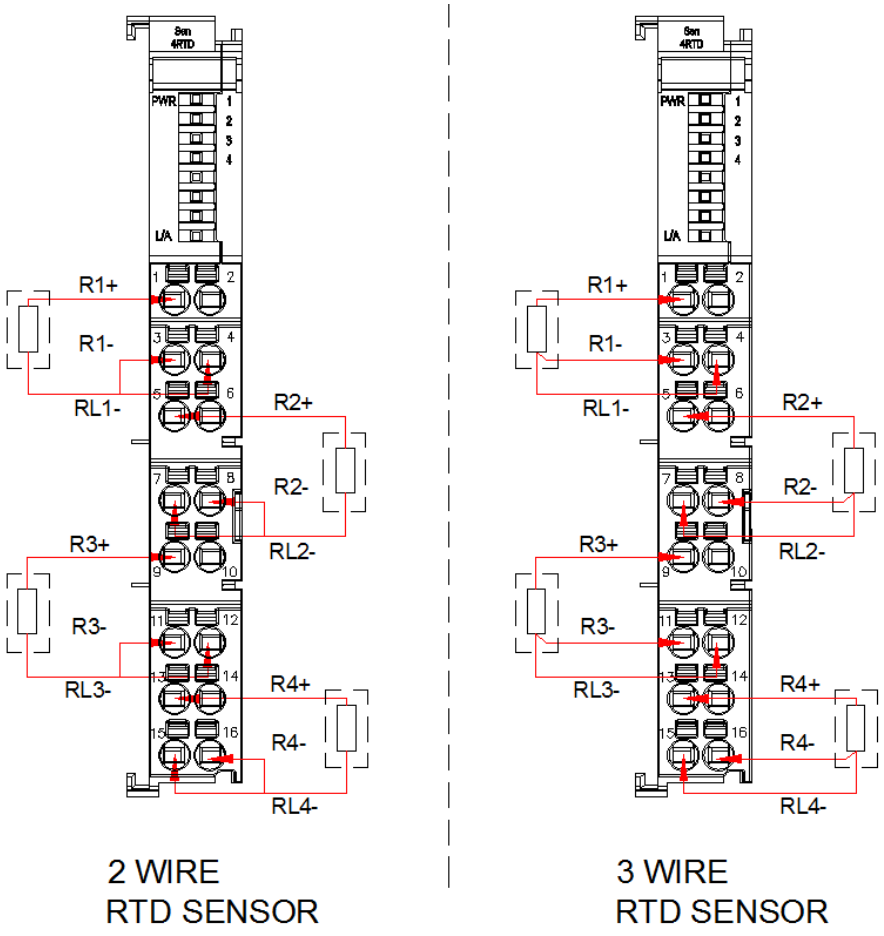
No.		Signal		Description
1	2	R1 +	/	Signal Input CH 1
3	4	R1 -	RL1 -	
5	6	R2 +	/	Signal Input CH 2
7	8	R2 -	RL2 -	
9	10	R3 +	/	Signal Input CH 3
11	12	R3 -	RL3 -	
13	14	R4 +	/	Signal Input CH 4
15	16	R4 -	RL4 -	

● LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
2	Green:Flash		CH 2 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
3	Green:Flash		CH 3 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
4	Green:Flash		CH 4 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection

- **Wiring**



As shown in the picture:

Take the connection method of one channel on the module as an example. The other channels are connected in the same way

（1）3-wire sensor：Connect to ports 1, 5 and 7.

（2）2-wire sensor：Connect ports 1 and 5 (5 and 7 are short-circuited).

3.Process data definition

DF20-M-4RTD-PT Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									

Data description:

Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

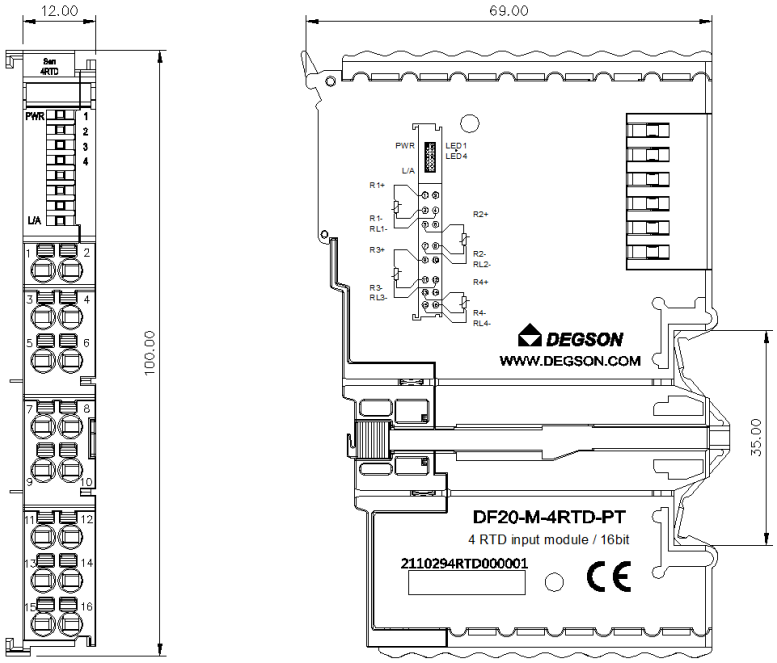
Analog Input Data（DF20-M-2RTD-PT）——PT100/PT200/PT500		
Temperature (℃)	Decimal	
>860	32767	Exceeds the upper limit
860	8600	Overflow
850 … … -200	8500 … … -2000	Rated range
-210	-2100	Underflow
<-210	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——PT1000		
Temperature (℃)	Decimal	
>860	32767	Exceeds the upper limit
860	8600	Overflow
850 … … -200	8500 … … -2000	Rated range
-204	-2040	Underflow
<-204	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——NI100/NI200/NI500/NI1000		
Temperature (℃)	Decimal	
>254	32767	Exceeds the upper limit

254	2540	Overflow
250 … … -60	2500 … … -600	Rated range
-64	-640	Underflow
<-64	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——NI120		
Temperature（℃）	Decimal	
>313	32767	Exceeds the upper limit
313	3130	Overflow
309 … … -79	3090 … … -790	Rated range
-83	-830	Underflow
<-83	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——CU10/CU50/CU100		
Temperature（℃）	Decimal	
>163	32767	Exceeds the upper limit
163	1630	Overflow
159 … … -59	1590 … … -590	Rated range
-63	-630	Underflow
<-63	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-2RTD-PT）——CU53		
Temperature（℃）	Decimal	
>154	32767	Exceeds the upper limit
154	1540	Overflow
150 … … -50	1500 … … -500	Rated range
-54	-540	Underflow
<-54	-32767	Exceeds the lower limit
Line break	-32768	Line break

4.Machinery installation

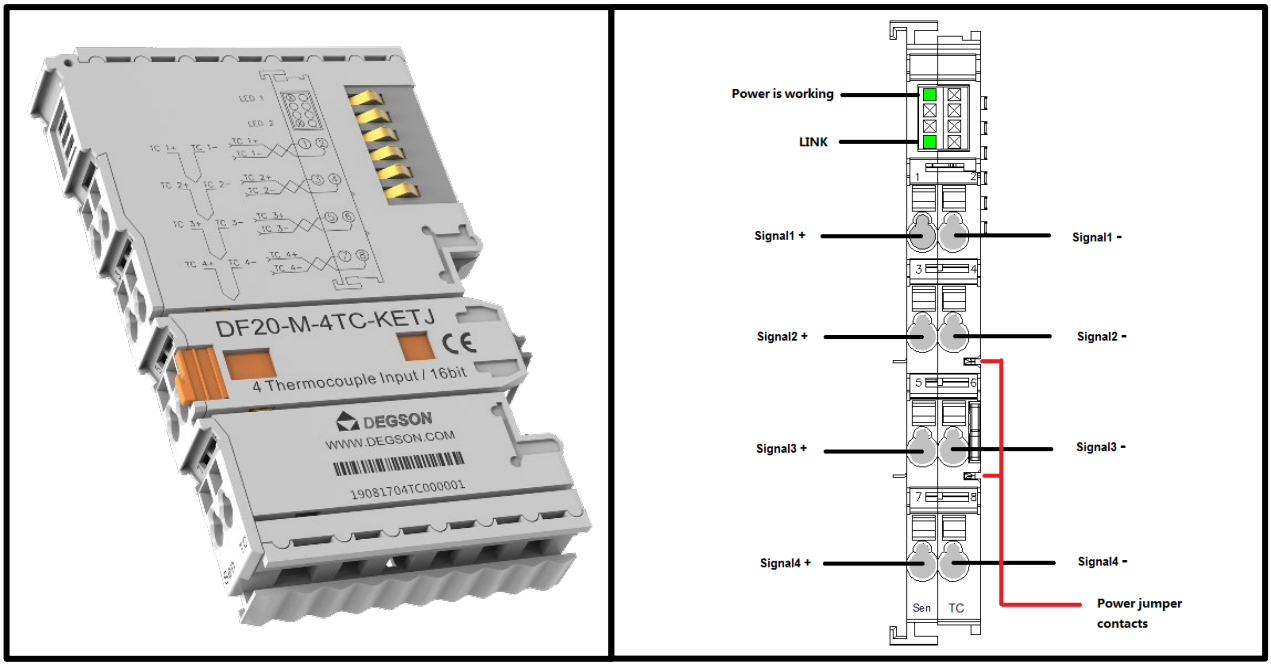
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- The module supports 4-channel thermocouple signal acquisition，K type ,E type ,T type ,J type ,B type ,S type ,R type ,N type ,L type.
- The module could be connected to a 2-wire thermocouple sensor.
- This module reserved eight cold end compensation output channels to compensate the cold end temperature difference.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each channel is equipped with an LED indicator.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

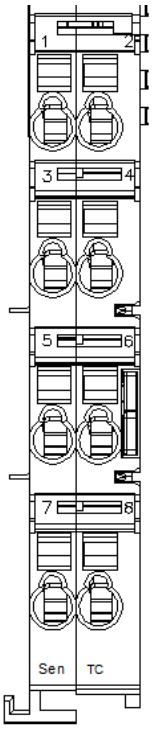


1.Specification

Technical data	
Number of channels	4
Signal type	Thermocouple
Signal type	E(-270～1000℃)，J(-210～1200℃)，T(-270～400℃)，K(-270～1370℃)，B(50～1820℃)，S(-50～1760℃)，R(-50～1770℃)，N(0～2320℃)，L(-200～900℃)
Cold End compensation	Internal and external (accuracy ≤3K)
Temperature coefficient	≤50ppm/K
Diagnosis	Yes
Connection type	2-line
Resolution [bit]	16 Bit，0.1℃/each number
Precision	±0.3%
Data size	8 Byte
Temperature coefficient	±0.5%
Measuring range	-270℃～1370℃
Supply voltage (system)	5VDC；via data contacts
Current consumption	<70mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Frequency interference suppression	10Hz | 50Hz | 60Hz | 400Hz
Conversion time	125ms
Fault diagnosis, Reverse protection	Yes
Diagnosis	Disconnection, Parameter assignment error
Process alarm	Upper/Lower limit, per channel
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

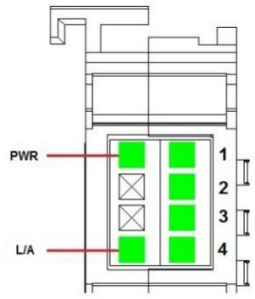
2.Hardware Interface

- **Wiring Terminal**



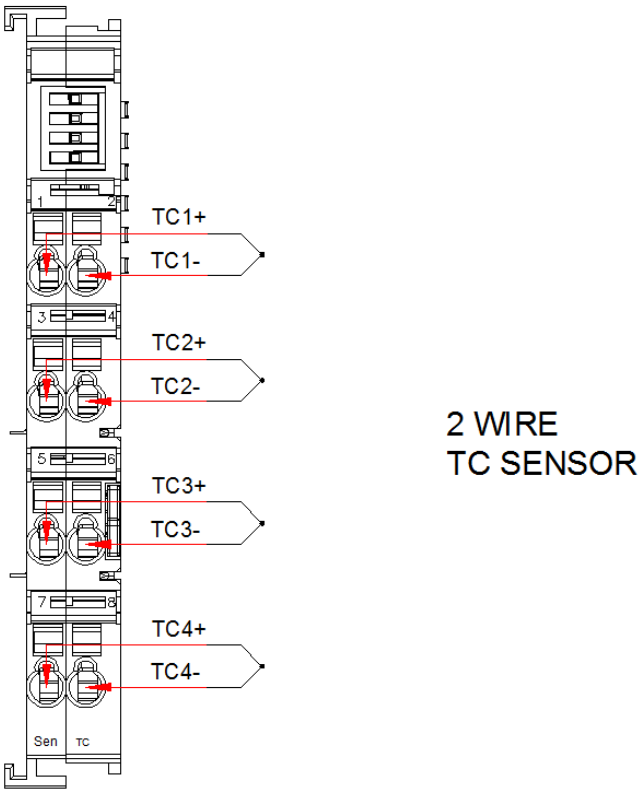
No.	Signal	Description
1	TC 1+	Signal Input CH 1
2	TC 1-	
3	TC 2+	Signal Input CH 2
4	TC 2-	
5	TC 3+	Signal Input CH 3
6	TC 3-	
7	TC 4+	Signal Input CH 4
8	TC 4-	

LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
2	Green:Flash		CH 2 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
3	Green:Flash		CH 3 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
4	Green:Flash		CH 4 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection

- **Wiring**



As shown in the picture:

一共为 4 个通道，分别为 1，2 为通道一；3，4 为通道二；5，6 为通道三；7，8 为通道四。

本模块采用二线制传感器进行连接，将传感器的+接入 1 端口，将-接入 2 端口，以此类推。

本模块预留了四个冷端补偿输出通道用来补偿冷端温度差异，若需要补偿时，只需在初始调试时补偿一次即可。

3.Process data definition

DF20-M-4TC-KETJ Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									

Data description:

Analog Input Data(Channel 1~4)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4TC-KETJ）—E type		
Temperature (℃)	Decimal	
>1010	32767	Exceeds the upper limit
1010	10100	Overflow
1000 … … -270	10000 … … -2700	Rated range
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—J type		
Temperature (℃)	Decimal	
>1210	32767	Exceeds the upper limit
1210	12100	Overflow
1200 … … -210	12000 … … -2100	Rated range
-220	-2200	Underflow
<-220	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—T type		
Temperature (℃)	Decimal	
>410	32767	Exceeds the upper limit
410	4100	Overflow
400 … … -270	4000 … … -2700	Rated range
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—K type		
Temperature (℃)	Decimal	
>1380	32767	Exceeds the upper limit
1380	13800	Overflow
1370 …	13700 …	Rated range

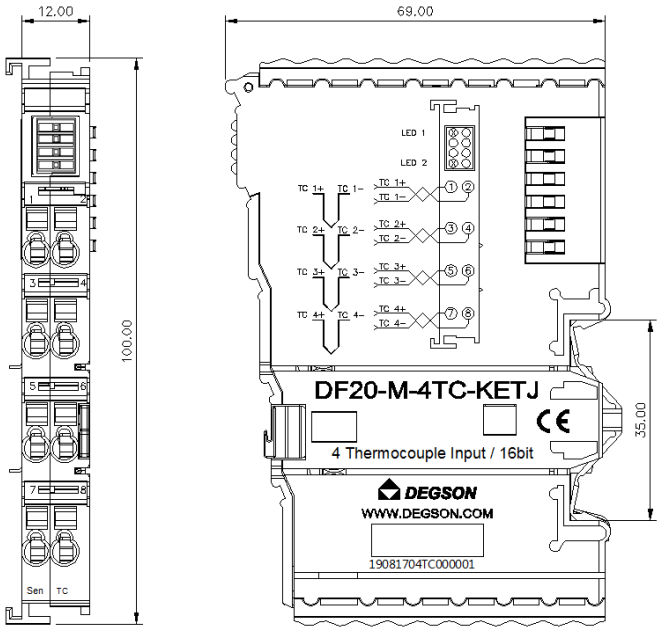
… -270	… -2700	
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—B type		
Temperature (℃)	Decimal	
>1830	32767	Exceeds the upper limit
1830	18300	Overflow
1820 … … 50	18200 … … 500	Rated range
40	400	Underflow
<40	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—S type		
Temperature (℃)	Decimal	
>1770	32767	Exceeds the upper limit
1770	17700	Overflow
1760 … … -50	17600 … … -500	Rated range
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—R type		
Temperature (℃)	Decimal	
>1780	32767	Exceeds the upper limit
1780	17800	Overflow
1770 … … -50	17700 … … -500	Rated range
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—N type		
Temperature (℃)	Decimal	
>2330	32767	Exceeds the upper limit
2330	17800	Overflow
2320 …	17700 …	Rated range

… 0	… 0	
-10	-100	Underflow
<-10	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—L type		
Temperature (℃)	Decimal	
>910	32767	Exceeds the upper limit
910	9100	Overflow
900 … … -200	9000 … … -2000	Rated range
-210	-2100	Underflow
<-210	-32767	Exceeds the lower limit
Line break	-32768	Line break

4.Machinery installation

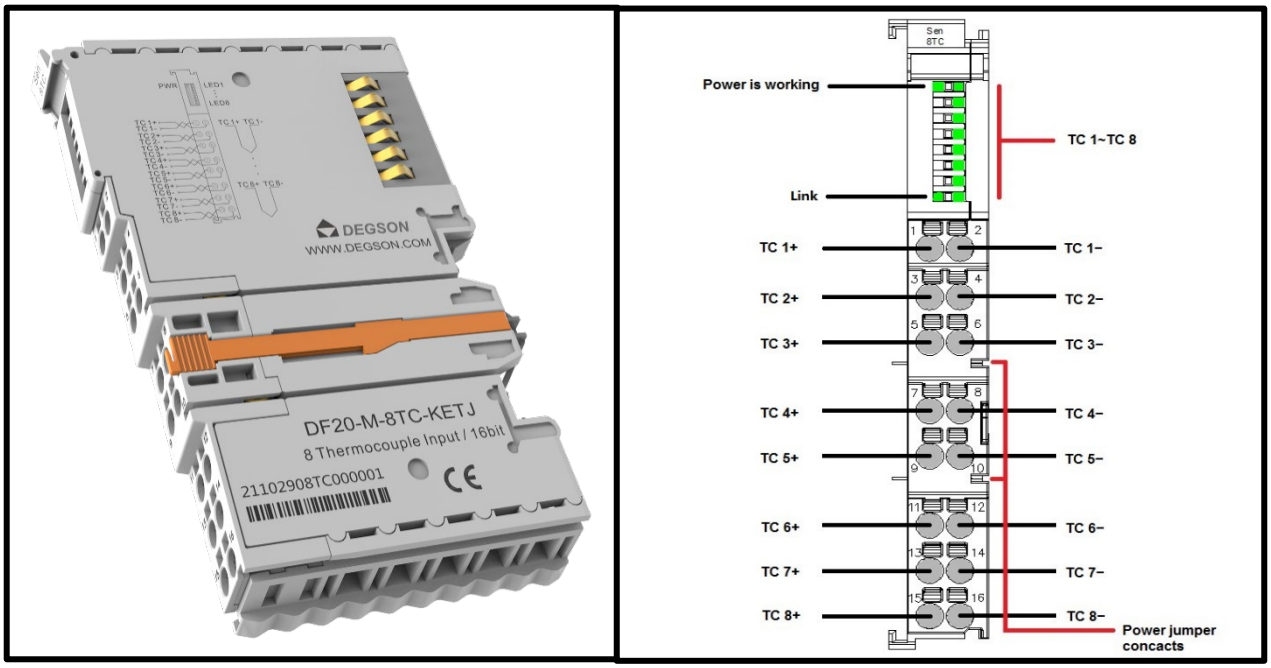
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- The module supports 8-channel thermocouple signal acquisition，K type ,E type ,T type ,J type ,B type ,S type ,R type ,N type ,L type.
- The module could be connected to a 2-wire thermocouple sensor.
- This module reserved eight cold end compensation output channels to compensate the cold end temperature difference.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Each channel is equipped with an LED indicator.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

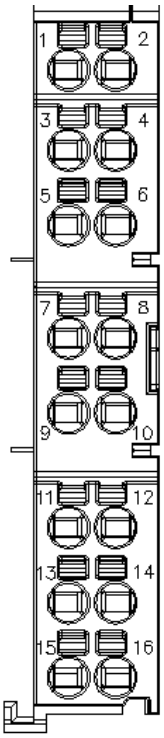


1.Specification

Technical data	
Number of channels	8
Signal type	Thermocouple
Signal type	E(-270～1000℃)，J(-210～1200℃)，T(-270～400℃)，K(-270～1370℃)，B(50～1820℃)，S(-50～1760℃)，R(-50～1770℃)，N(0～2320℃)，L(-200～900℃)
Cold End compensation	Internal and external (accuracy ≤3K)
Temperature coefficient	≤50ppm/K
Diagnosis	Yes
Connection type	2-line
Resolution [bit]	16 Bit，0.1℃/each number
Precision	±0.3%
Data size	16 Byte
Temperature coefficient	±0.5%
Measuring range	-270℃～1370℃
Supply voltage (system)	5VDC；via data contacts
Current consumption	<100mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Frequency interference suppression	10Hz | 50Hz | 60Hz | 400Hz
Conversion time	125ms
Fault diagnosis, Reverse protection	Yes
Diagnosis	Disconnection, Parameter assignment error
Process alarm	Upper/Lower limit, per channel
Indicators	10x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

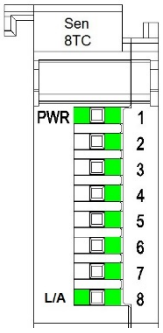
2.Hardware Interface

- **Wiring Terminal**



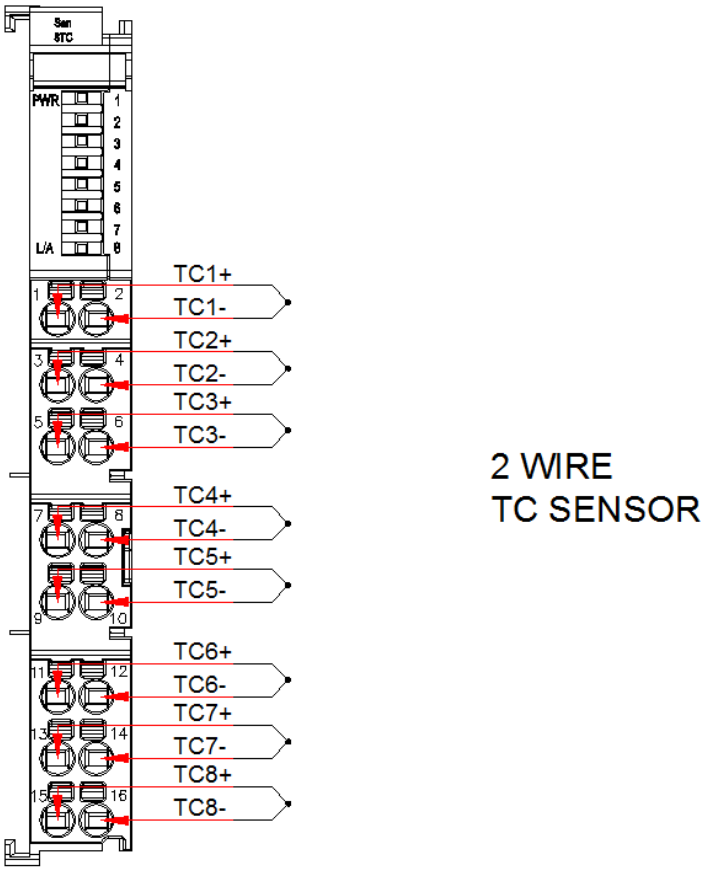
No.	Signal	Description
1	TC 1+	Signal Input CH 1
2	TC 1-	
3	TC 2+	Signal Input CH 2
4	TC 2-	
5	TC 3+	Signal Input CH 3
6	TC 3-	
7	TC 4+	Signal Input CH 4
8	TC 4-	
9	TC 5+	Signal Input CH 5
10	TC 5-	
11	TC 6+	Signal Input CH 6
12	TC 6-	
13	TC 7+	Signal Input CH 7
14	TC 7-	
15	TC 8+	Signal Input CH 8
16	TC 8-	

● LED Indicator



LED Indicator	State		Definition
PWR	Green:ON		Power Normal
	Green:OFF		Power Failure
L/A	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault
1	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
2	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
3	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
4	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
5	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
6	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
7	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection
8	Green:Flash		CH 1 is normally sampled
	Green:ON		Value :exceeds limit
	Green:OFF		Disconnection

- **Wiring**



As shown in the picture:

There are 8 channels in total, Port 1,2 is CH 1 ； Port 3,4 is CH 2； Port 5,6 is CH 3；Port 7, 8 is CH 4；Prot 9,10 is CH 5 ， Port 11,12 is CH 6；Port 13,14 is CH 7; Port 15,16 are CH 8.

The module could be connected to a 2-wire thermocouple sensor., Connect the positive terminal of the sensor to port 1, the negative terminal to port 2, and so on.

3.Process data definition

DF20-M-8TC-KETJ Module process data definition

Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Analog Input Data(Channel 1)								Int16
Byte 1									
Byte 2	Analog Input Data(Channel 2)								Int16
Byte 3									
Byte 4	Analog Input Data(Channel 3)								Int16
Byte 5									
Byte 6	Analog Input Data(Channel 4)								Int16
Byte 7									
Byte 8	Analog Input Data(Channel 5)								Int16
Byte 9									
Byte 10	Analog Input Data(Channel 6)								Int16
Byte 11									
Byte 12	Analog Input Data(Channel 7)								Int16
Byte 13									
Byte 14	Analog Input Data(Channel 8)								Int16
Byte 15									

Data description:

Analog Input Data(Channel 1~8)：Analog signal Input value of corresponding channel.

Analog Input Data（DF20-M-4TC-KETJ）—E type		
Temperature (℃)	Decimal	
>1010	32767	Exceeds the upper limit
1010	10100	Overflow
1000 … … -270	10000 … … -2700	Rated range
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—J type		
Temperature (℃)	Decimal	
>1210	32767	Exceeds the upper limit
1210	12100	Overflow
1200 … … -210	12000 … … -2100	Rated range
-220	-2200	Underflow
<-220	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—T type		
Temperature (℃)	Decimal	
>410	32767	Exceeds the upper limit
410	4100	Overflow
400 … … -270	4000 … … -2700	Rated range
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—K type		
Temperature (℃)	Decimal	
>1380	32767	Exceeds the upper limit
1380	13800	Overflow
1370 …	13700 …	Rated range

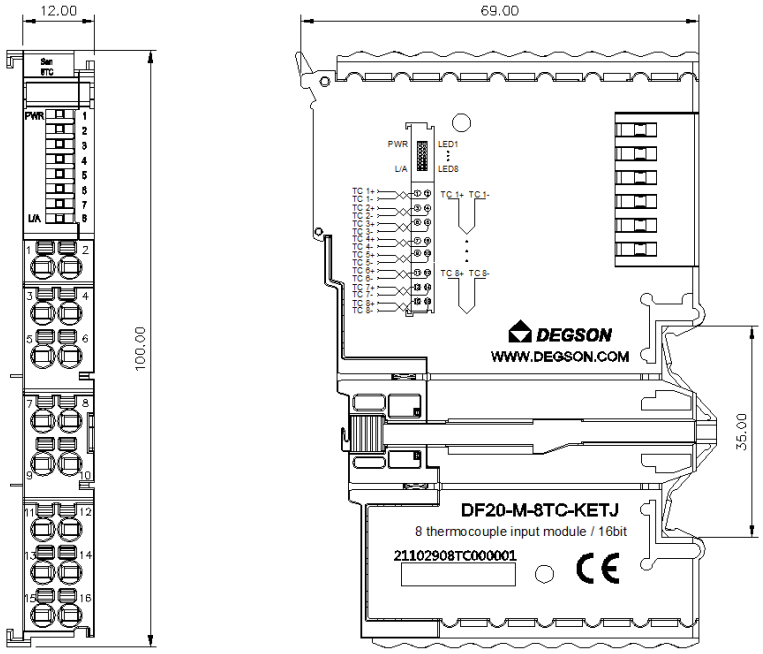
… -270	… -2700	
-280	-2800	Underflow
<-280	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—B type		
Temperature (℃)	Decimal	
>1830	32767	Exceeds the upper limit
1830	18300	Overflow
1820 … … 50	18200 … … 500	Rated range
40	400	Underflow
<40	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—S type		
Temperature (℃)	Decimal	
>1770	32767	Exceeds the upper limit
1770	17700	Overflow
1760 … … -50	17600 … … -500	Rated range
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—R type		
Temperature (℃)	Decimal	
>1780	32767	Exceeds the upper limit
1780	17800	Overflow
1770 … … -50	17700 … … -500	Rated range
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—N type		
Temperature (℃)	Decimal	
>2330	32767	Exceeds the upper limit
2330	17800	Overflow
2320 …	17700 …	Rated range

… 0	… 0	
-10	-100	Underflow
<-10	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data（DF20-M-4TC-KETJ）—L type		
Temperature (℃)	Decimal	
>910	32767	Exceeds the upper limit
910	9100	Overflow
900 … … -200	9000 … … -2000	Rated range
-210	-2100	Underflow
<-210	-32767	Exceeds the lower limit
Line break	-32768	Line break

4.Machinery installation

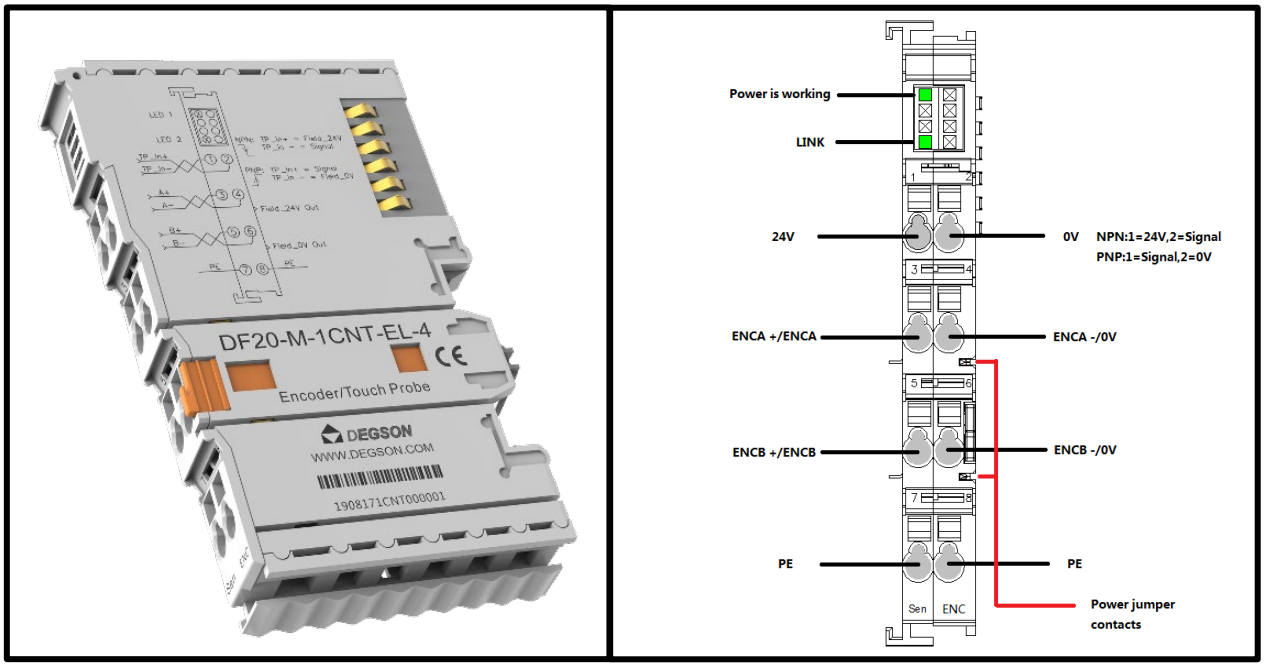
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- The module supports one channel of encoder input ,Input signal voltage 24VDC.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

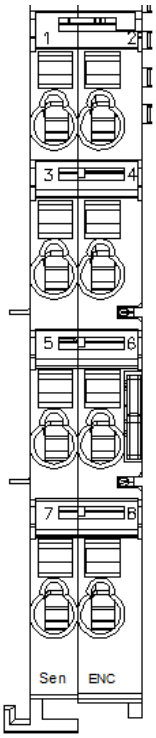


1.Specification

Technical data	
Number of channels	1
Maximum frequency count	1Mhz
Input signal type	Incremental encoder
Input signal voltage	24VDC
Input connection type	4-line
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	12 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

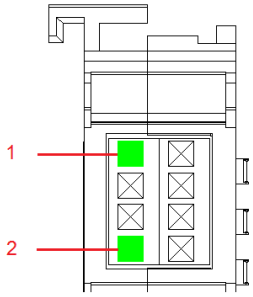
2.Hardware Interface

- **Wiring Terminal**



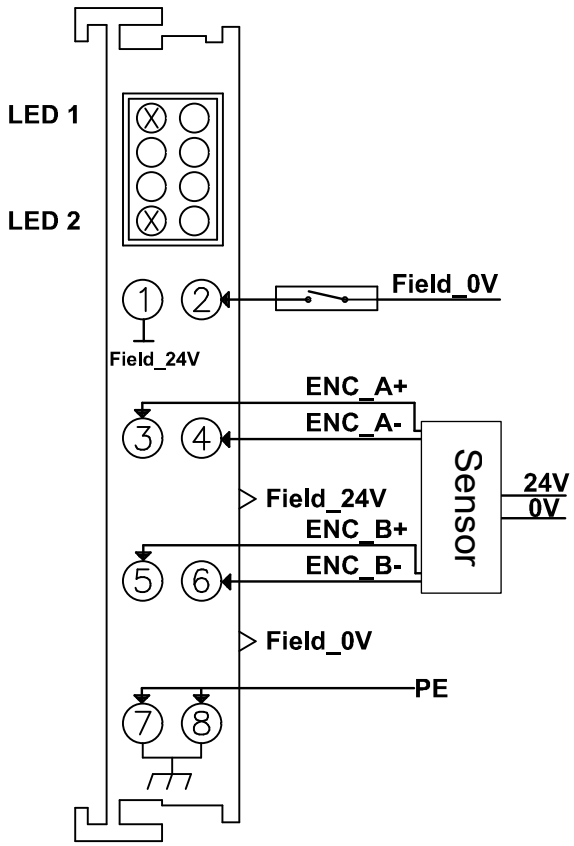
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	Quadrature encoder A+	24V input voltage , quadrature encoder
4	Quadrature encoder A-	
5	Quadrature encoder B+	
6	Quadrature encoder B-	
7	PE	Protect Earthing
8	PE	

LED Indicator

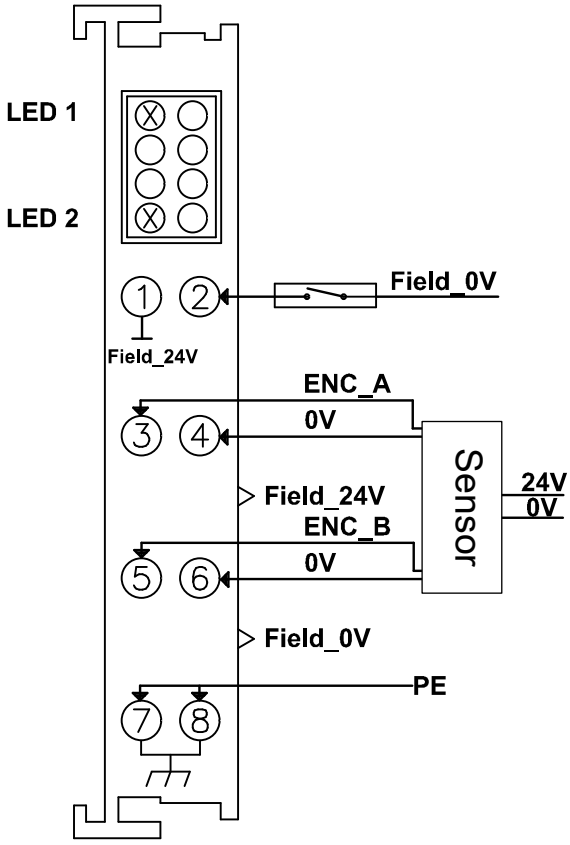


LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

- **Wiring**



A+/A-&B+/B- Differential signal



A/B signal

In the left figure, the input A+/A- and B+/B- of the incremental encoder correspond to pins 3, 4, 5 and 6; The electron probe input corresponds to pin 1 and pin 2. The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low effective signal outside. 7, 8 pin to the safety ground.

In the right figure, the input A and B of the incremental encoder correspond to pins 3 and 5; Pins 4 and 6 connected to the sensor 0V; The electron probe input corresponds to pin 1 and pin 2. The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low effective signal outside. 7, 8 pin to the safety ground.

3.Process data definition

DF20-M-1CNT-EL-4 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Command data								Uint16
Byte 1									
Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	State data								Uint16
Byte 1									
Byte 2	Encoder data is 16 bits high								Int32
Byte 3									
Byte 4	Encoder data is 16 bits lower								
Byte 5									
Byte 6	The electron probe is 16 bits high								Int32
Byte 7									
Byte 8	The electron probe latch is 16 bits lower								
Byte 9									

Output data definition

Byte 0	0x012B：Sampling command 0x012C：This command is used to clear sampling data Other data：Idle command
Byte 1	

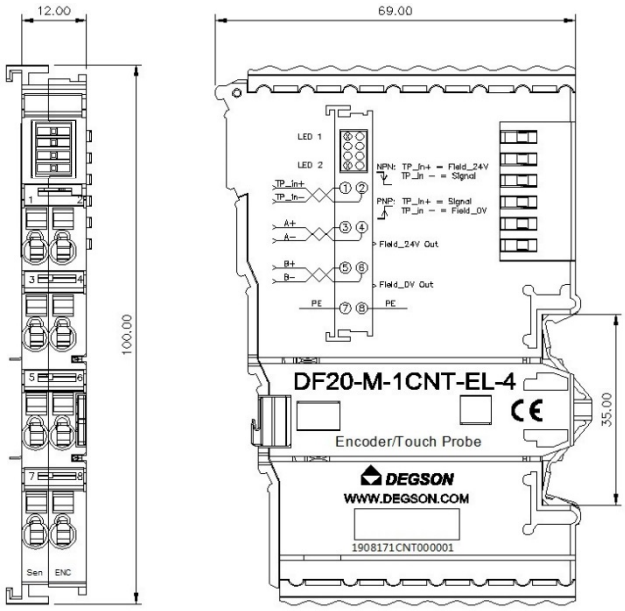
Input data definition

Byte 0	0x010B：State of sampling 0x010C：Data zeroing status 0x010E：State of error 0x0109：Idle state
Byte 1	
Byte 2	Data range：-2147483648~2147483647
Byte 3	
Byte 4	
Byte 5	
Byte 6	Data range：-2147483648~2147483647
Byte 7	
Byte 8	
Byte 9	

4.Machinery installation

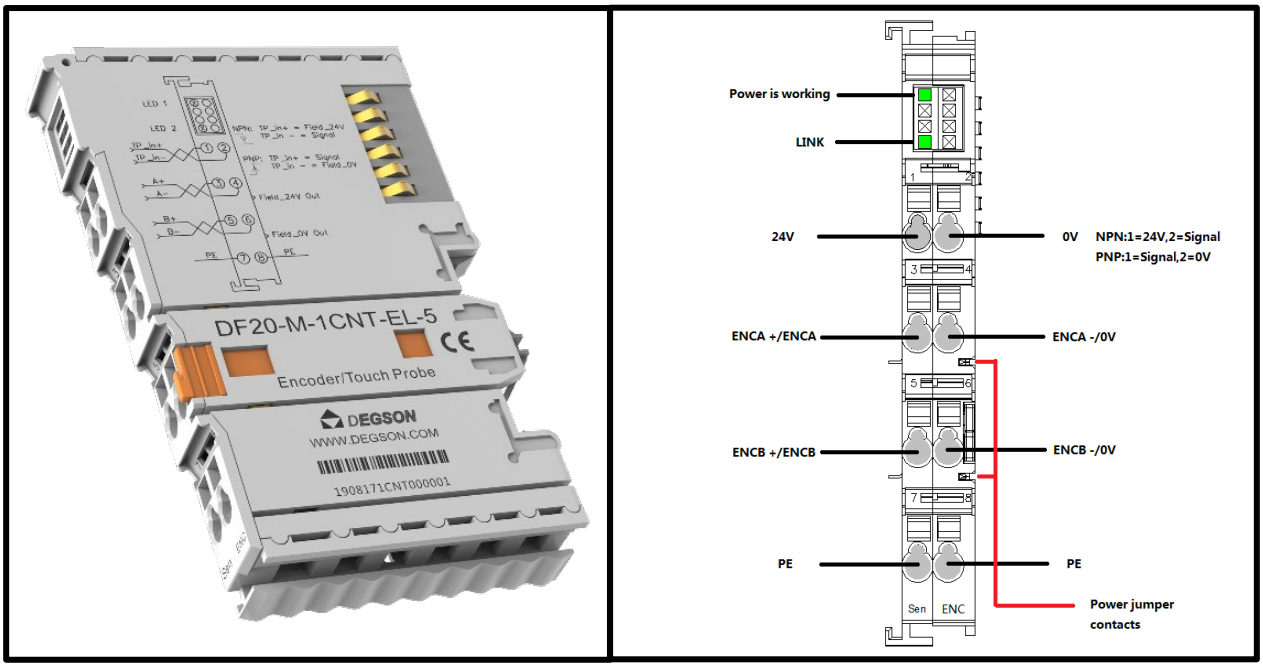
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- The module supports one channel of encoder input ,Input signal voltage5VDC.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

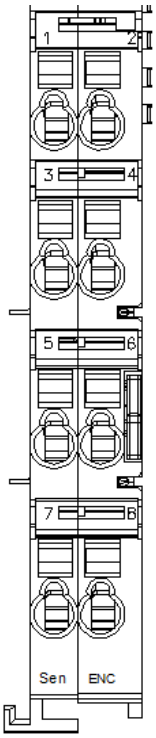


1.Specification

Technical data	
Number of channels	1
Maximum frequency count	1Mhz
Input signal type	Incremental encoder
Input signal voltage	5VDC
Input connection type	4-line
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	12 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

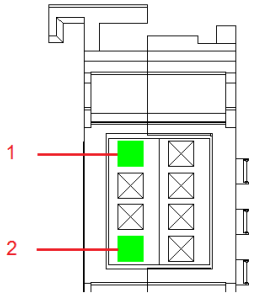
2.Hardware Interface

- **Wiring Terminal**



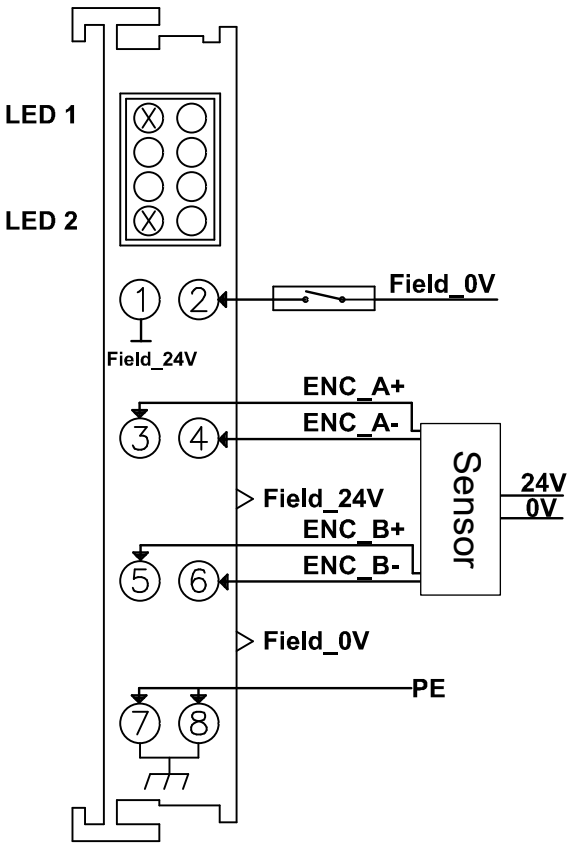
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	Quadrature encoder A+	24V input voltage , quadrature encoder
4	Quadrature encoder A-	
5	Quadrature encoder B+	
6	Quadrature encoder B-	
7	PE	Protect Earthing
8	PE	

LED Indicator

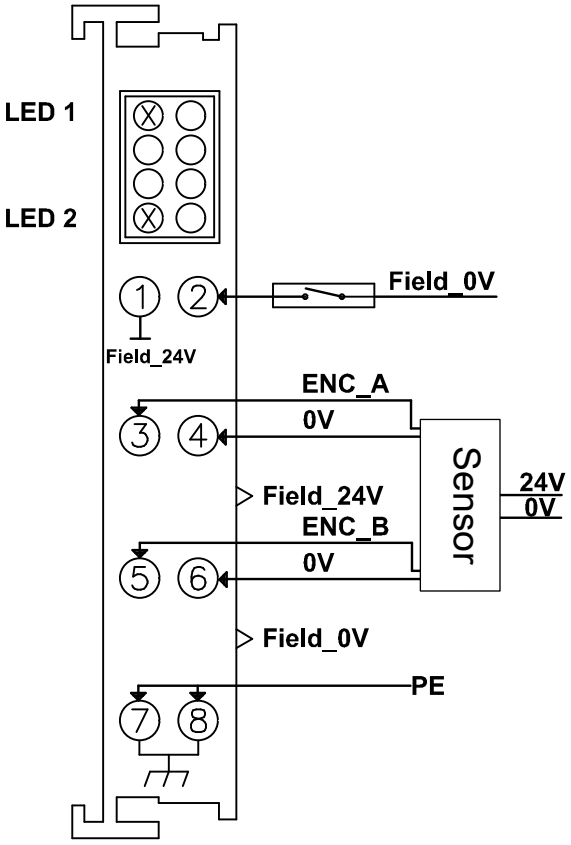


LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

- **Wiring**



A+/A-&B+/B- Differential signal



A/B signal

In the left figure, the input A+/A- and B+/B- of the incremental encoder correspond to pins 3, 4, 5 and 6; The electron probe input corresponds to pin 1 and pin 2. The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low effective signal outside. 7, 8 pin to the safety ground.

In the right figure, the input A and B of the incremental encoder correspond to pins 3 and 5; Pins 4 and 6 connected to the sensor 0V; The electron probe input corresponds to pin 1 and pin 2. The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low effective signal outside. 7, 8 pin to the safety ground.

3.Process data definition

DF20-M-1CNT-EL-5 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Command data								Uint16
Byte 1									
Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	State data								Uint16
Byte 1									
Byte 2	Encoder data is 16 bits high								Int32
Byte 3									
Byte 4	Encoder data is 16 bits lower								
Byte 5									
Byte 6	The electron probe is 16 bits high								Int32
Byte 7									
Byte 8	The electron probe latch is 16 bits lower								
Byte 9									

Output data definition

Byte 0	0x010B：State of sampling 0x010C：Data zeroing status 0x010E：State of error 0x0109：Idle state
Byte 1	

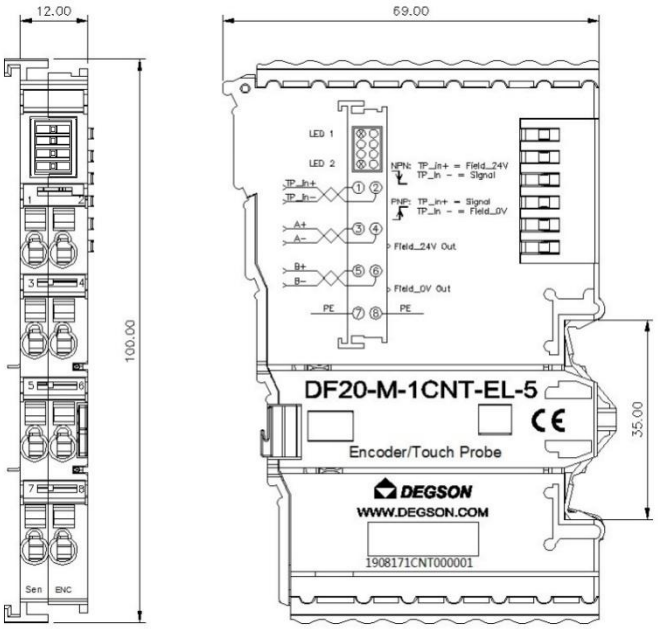
Input data definition

Byte 0	0x010B：State of sampling 0x010C：Data zeroing status 0x010E：State of error 0x0109：Idle state
Byte 1	
Byte 2	Data range：-2147483648~2147483647
Byte 3	
Byte 4	
Byte 5	
Byte 6	Data range：-2147483648~2147483647
Byte 7	
Byte 8	
Byte 9	

4.Machinery installation

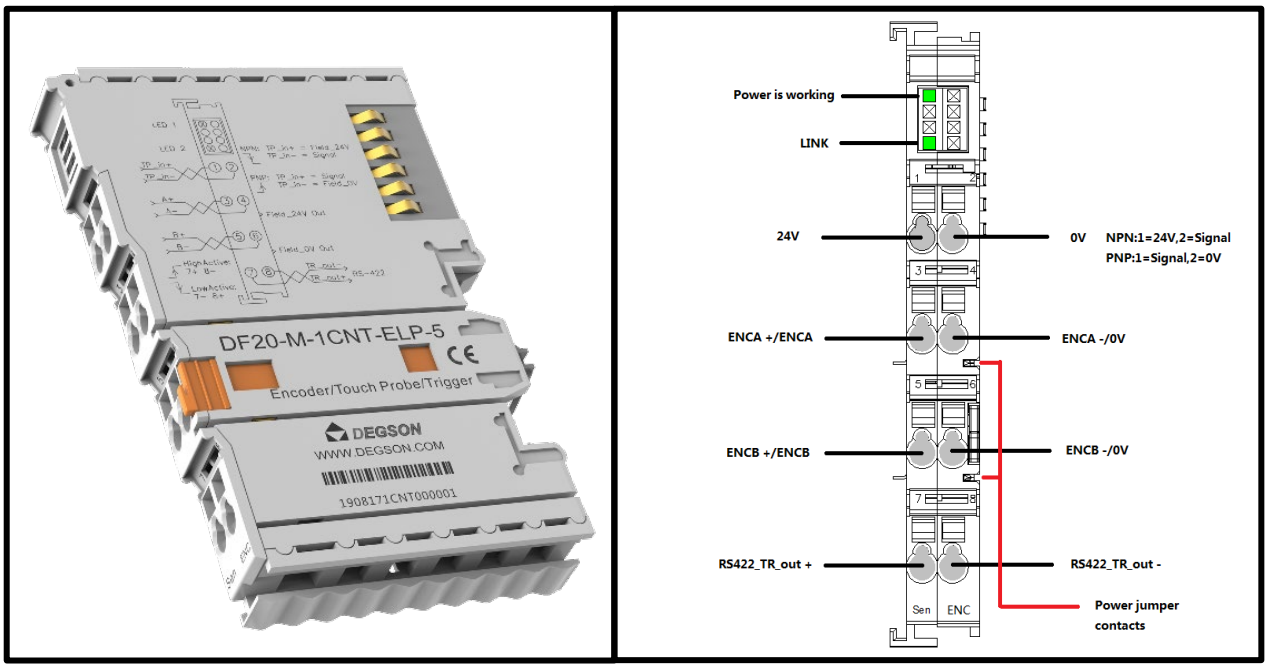
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 1 channel encoder input/ pulse output/ 5VDC (DF20-M-1CNT-ELP-5)

- The module supports one channel of encoder input，Input signal voltage 5VDC，pulse output.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Transmitted with a resolution of 16 bits.
- Protection level IP20.

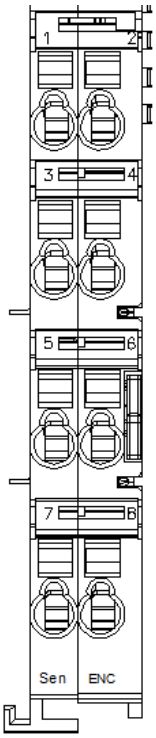


1.Specification

Technical data	
Number of channels	1
Maximum frequency count	1Mhz
Input signal type	Incremental encoder
Input signal voltage	5VDC
Input connection type	4-line
Output signal type	422 type
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	12 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<200mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

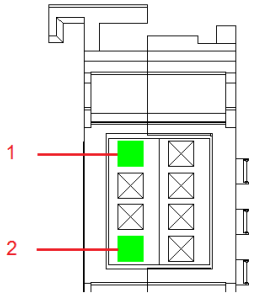
2.Hardware Interface

- **Wiring Terminal**



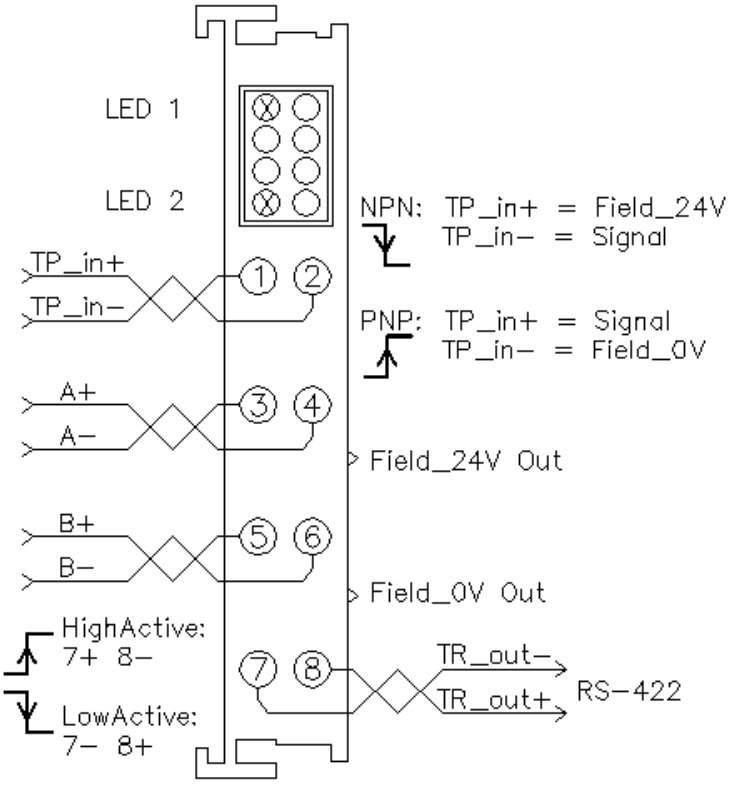
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	A+	5V Signal input
4	A-	
5	B+	
6	B-	
7	RS 422 output +	Pulse output
8	RS 422 output -	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

- **Wiring**



As shown in the picture:

Incremental encoder input A+/A- and B+/B- corresponding pins 3, 4, 5, 6;

The electron probe input corresponds to pin 1 and pin 2. The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low effective signal outside;

Pin 7 and pin 8 are connected to pulse signal output. When the output signal is highly effective, pin 7 is negative signal and pin 8 is positive signal; When the output signal is low effective, 7, 8 pin switch.

3.Process data definition

DF20-M-1CNT-ELP-5 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Command data								Uint16
Byte 1									
Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	State data								Uint16
Byte 1									
Byte 2	Encoder data is 16 bits high								Int32
Byte 3									
Byte 4	Encoder data is 16 bits lower								
Byte 5									
Byte 6	The electron probe is 16 bits high								Int32
Byte 7									
Byte 8	The electron probe latch is 16 bits lower								
Byte 9									

Output data definition

Byte 0	0x010B：State of sampling 0x010C：Data zeroing status 0x010E：State of error 0x0109：Idle state
Byte 1	

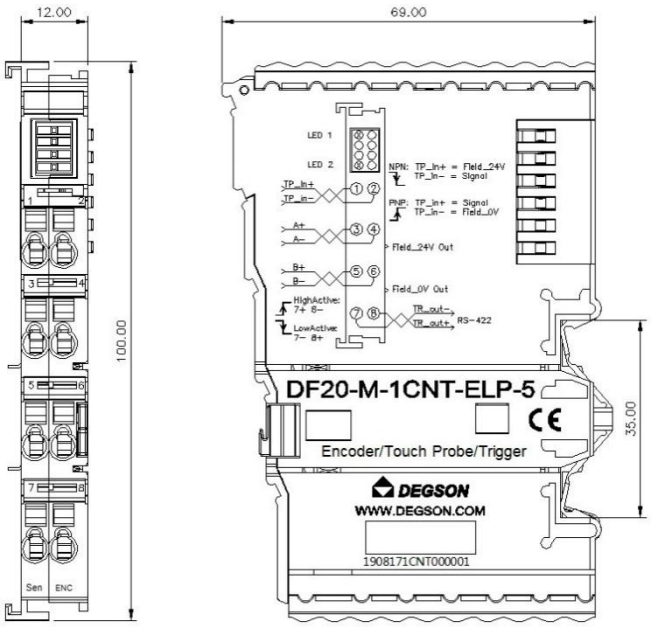
Input data definition

Byte 0	0x010B：State of sampling 0x010C：Data zeroing status 0x010E：State of error 0x0109：Idle state
Byte 1	
Byte 2	Data range：-2147483648~2147483647
Byte 3	
Byte 4	
Byte 5	
Byte 6	Data range：-2147483648~2147483647
Byte 7	
Byte 8	
Byte 9	

4.Machinery installation

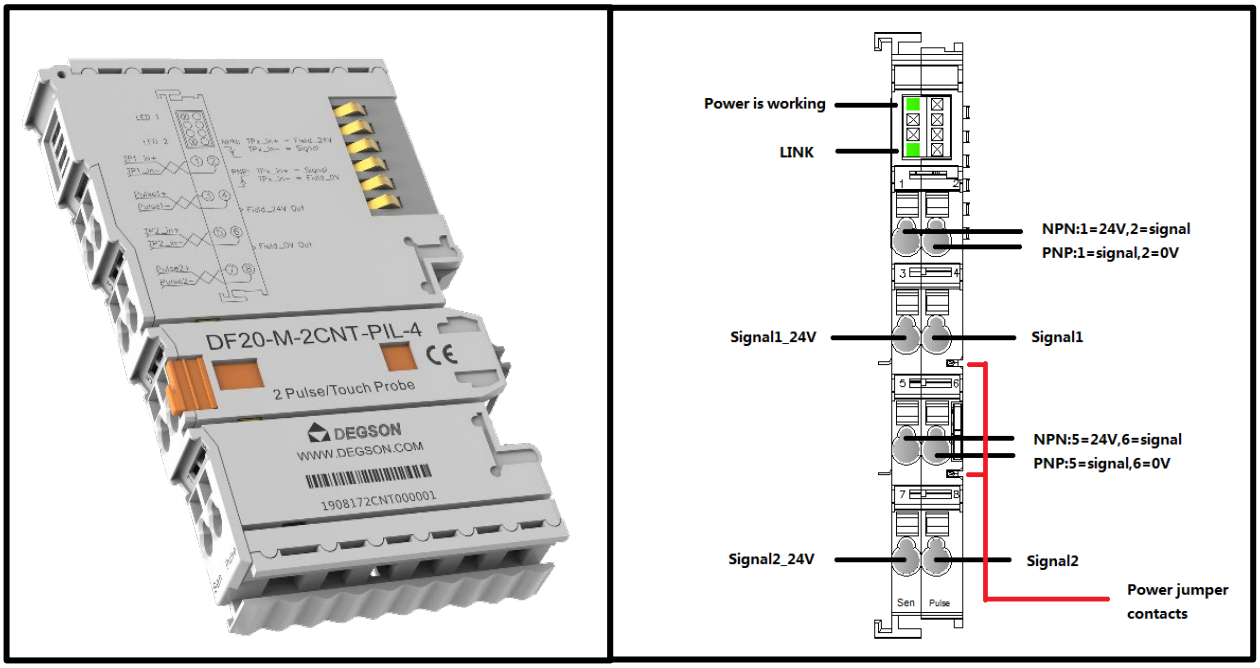
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 2 channel pluse count /24VDC (DF20-M-2CNT-PIL-4)

- The module supports two channel of pluse count ,Input signal voltage 24VDC.
- Each input module has a noise-rejection filter.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Protection level IP20.

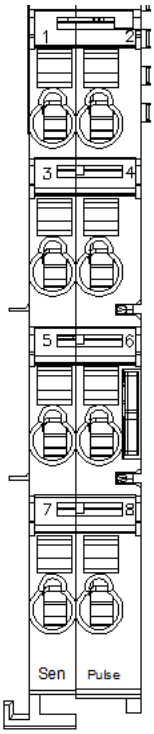


1.Specification

Technical data	
Number of channels	2
Maximum frequency count	1Mhz
Input signal type	Pulse signal
Input signal voltage	24VDC
Input connection type	2-line
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	28 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

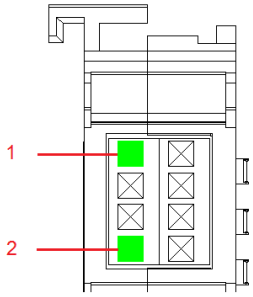
2.Hardware Interface

- **Wiring Terminal**



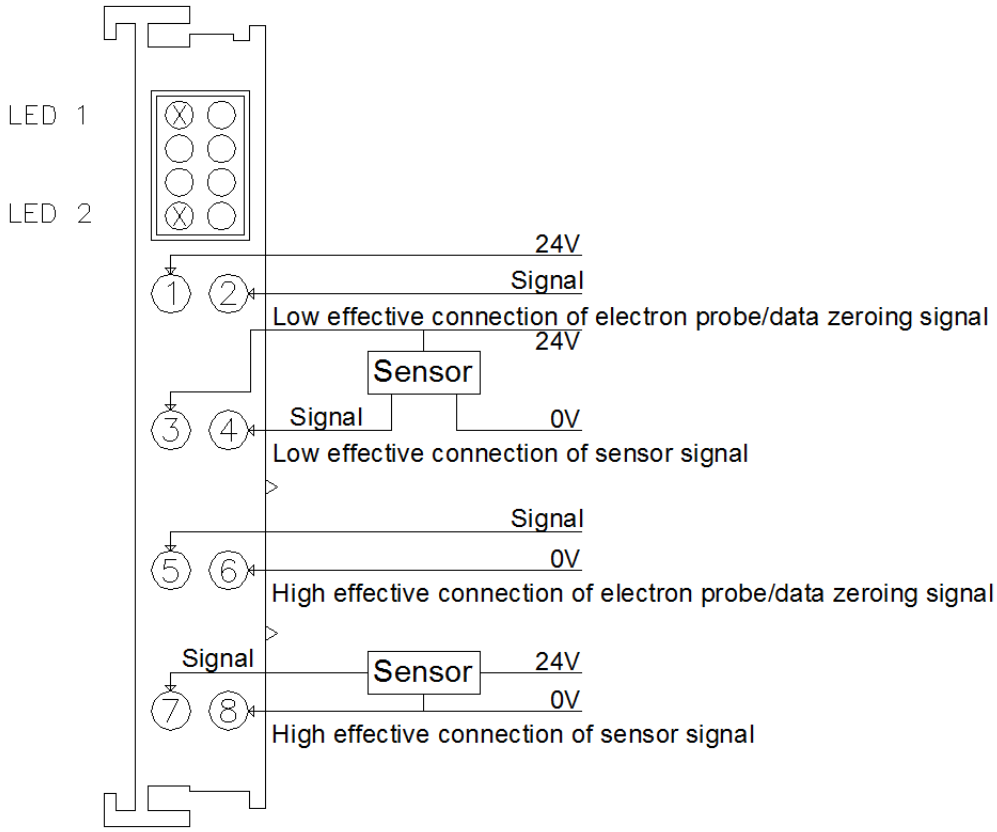
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	Signal 1 24V	CH 1 pluse input
4	Signal 1	
5	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
6	0V	
7	Signal 2 24V	CH 2 pluse input
8	Signal 2	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



As shown in the picture:

（1）Pin 1 and pin 2 are the input of the first channel electron probe/the first channel data zeroclearing signal. The specific function can be configured according to the requirements;

（2）Pin 3 and pin 4 are the first pulse input channel, as shown in the figure, low effective connection of sensor signal;

（3）Pin 5 and pin 6 are the input of the second channel electron probe/the second channel data zeroclearing signal. Usage is consistent with the input of the first channel electron probe/first channel data zeroing signal；

（4）Pin 7 and pin 8 are the second pulse input channel, as shown in the figure, high effective connection of sensor signal;

Note :

（1）When the module NPN type switch input, pin 1 is connected with 24V inside, pin 2 is connected with low effective signal outside;

（2）When the module PNP type switch input, pin 1 is connected with high effective signal outside, pin 2 is connected with 0V inside.

3.Process data definition

DF20-M-2CNT-PIL-4 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	CH 1 command output data								Uint 8
Byte 1	CH 1 pulse comparison value output								Uint 32
Byte 2									
Byte 3									
Byte 4									
Byte 5	CH 2 command output data								Uint 8
Byte 6	CH 2 pulse comparison value output								Uint 32
Byte 7									
Byte 8									
Byte 9									
Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	CH 1 Status input data								Uint 8
Byte 1	CH 1 pulse number								Uint 8
Byte 2									
Byte 3									
Byte 4									
Byte 5	CH 1 latched pulse number								Uint 8
Byte 6									
Byte 7									
Byte 8									
Byte 9	CH 2 Status input data								Uint 8
Byte 10	CH 2 pulse number								Uint 8
Byte 11									
Byte 12									
Byte 13									
Byte 14	CH 2 latched pulse number								Uint 8
Byte 15									
Byte 16									
Byte 17									

Output data definition

Byte 0	
bit7~bit 3	Reserved bit
bit2	0：CH 1 Comparison value failure； 1：CH 1 The comparison value is enabled
bit1	0：enabled CH 1 Electron probe function；1：enabled CH 1 External signals trigger count zeroing function
bit0	0：CH 1 Stop counting，Clear the original count to zero；1：CH 1 Start counting
Byte 1~4	CH 1 Pulse comparison value output，Unsigned 32-bit data
Byte 5	
bit7~bit 3	Reserved bit
bit2	0：CH 2 Comparison value failure； 1：CH 2 The comparison value is enabled
bit1	0：enabled CH 2 Electron probe function；1：enabled CH 2 External signals trigger count zeroing function
bit0	0：CH 2 Stop counting，Clear the original count to zero；1：CH 2 Start counting
Byte 6~9	CH 2 Pulse comparison value output，Unsigned 32-bit data

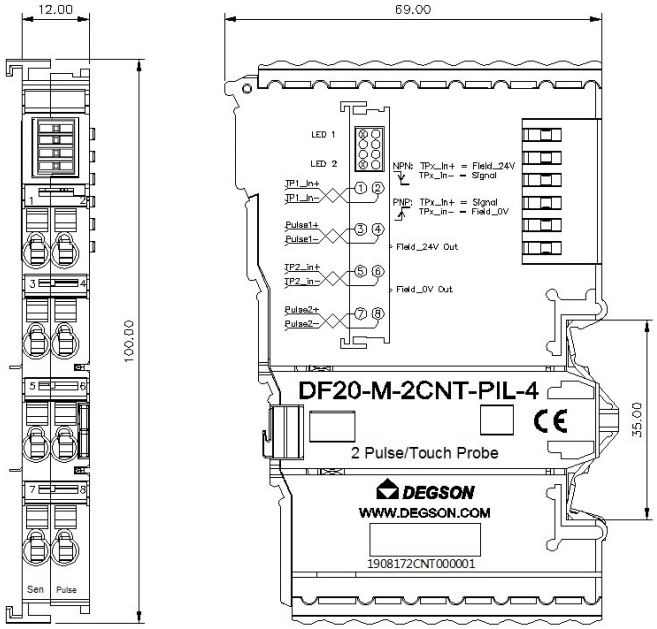
Input data definition

Byte 0	
bit7~bit3	Reserved bit
bit2	0：CH 1 count value is less than comparison value； 1：CH 1 count value is greater then comparison value
bit1	0：Never electron probe /the first channel count clear signal； 1：electron probe / the first channel count clear signal
bit0	0：CH 1 stop counting state，Clear the original count to zero； 1：CH 1 State of counting
Byte 1~4	CH 1 pulse input value，Unsigned 32-bit data
Byte 5~8	CH 1pulse input latched value，Unsigned 32-bit data
Byte 9	
bit7~bit3	Reserved bit
bit2	0：CH 2 count value is less than comparison value； 1：CH 2 count value is greater then comparison value
bit1	0：Never electron probe /the first channel count clear signal； 1：electron probe / the first channel count clear signal
bit0	0：CH 2 stop counting state，Clear the original count to zero； 1：CH 2 State of counting
Byte 10~13	CH 2 pulse input value，Unsigned 32-bit data
Byte 14~17	CH 2 pulse input latched value，Unsigned 32-bit data

4.Machinery installation

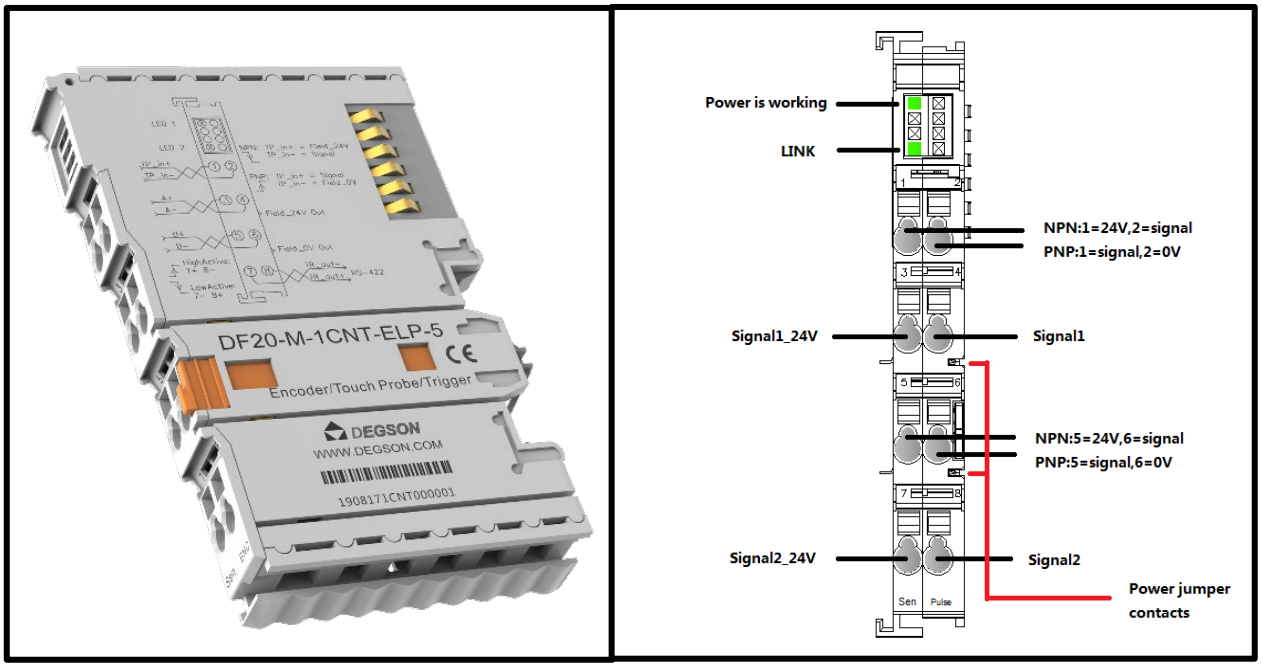
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 2 channel pluse count /5VDC(DF20-M-2CNT-PIL-5)

- The module supports two channel of pluse count ,Input signal voltage 5VDC。
- Each input module has a noise-rejection filter.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Magnetic isolated.
- Protection level IP20.

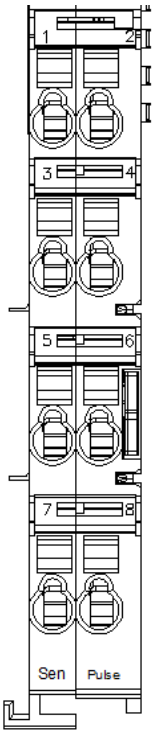


1.Specification

Technical data	
Number of channels	2
Maximum frequency count	1Mhz
Input signal type	Pulse signal
Input signal voltage	5VDC
Input connection type	2-line
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	28 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

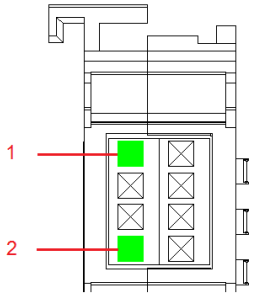
2.Hardware Interface

- **Wiring Terminal**



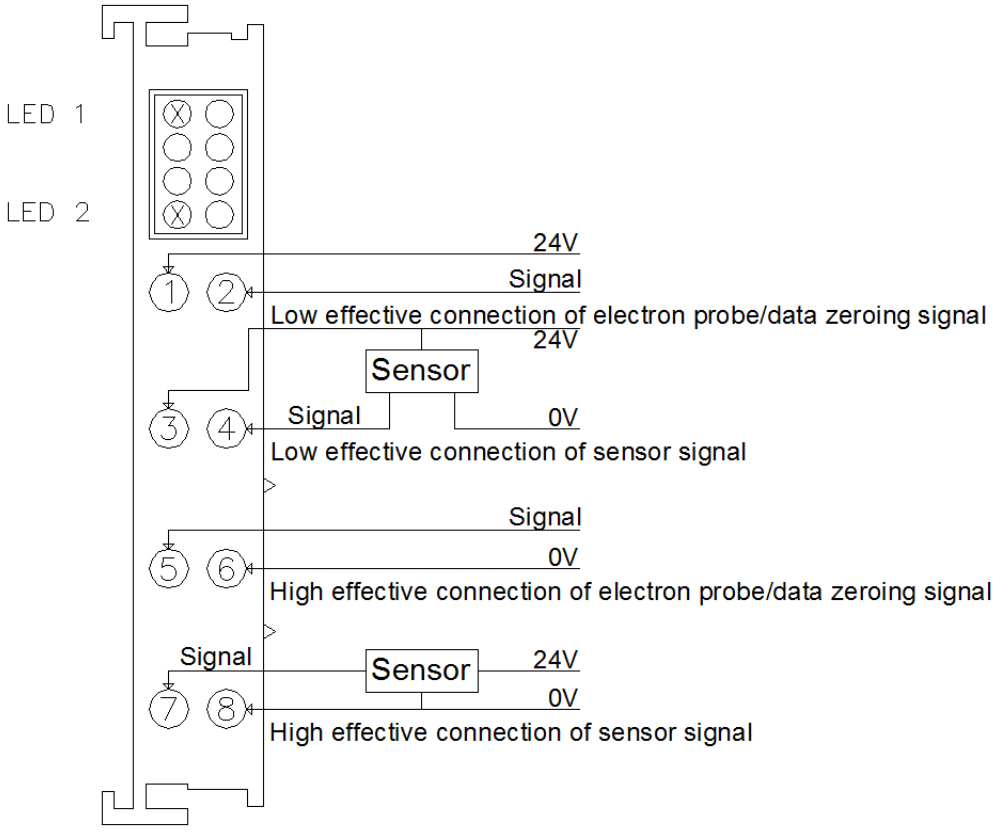
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	Signal 1 24V	CH 1 pluse input
4	Signal 1	
5	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
6	0V	
7	Signal 2 24V	CH 2 pulse input
8	Signal 2	

LED Indicator



LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

Wiring



As shown in the picture:

（1）Pin 1 and pin 2 are the input of the first channel electron probe/the first channel data zeroclearing signal. The specific function can be configured according to the requirements;

（2）Pin 3 and pin 4 are the first pulse input channel, as shown in the figure, low effective connection of sensor signal;

（3）Pin 5 and pin 6 are the input of the second channel electron probe/the second channel data zeroclearing signal. Usage is consistent with the input of the first channel electron probe/first channel data zeroing signal；

（4）Pin 7 and pin 8 are the second pulse input channel, as shown in the figure, high effective connection of sensor signal;

Note :

（1）When the module NPN type switch input, pin 1 is connected with 24V inside, pin 2 is connected with low effective signal outside;

（2）When the module PNP type switch input, pin 1 is connected with high effective signal outside, pin 2 is connected with 0V inside.

3.Process data definition

DF20-M-2CNT-PIL-5 Module process data definition

Output data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	CH 1 command output data								Uint 8
Byte 1	CH 1 pulse comparison value output								Uint 32
Byte 2									
Byte 3									
Byte 4									
Byte 5	CH 2 command output data								Uint 8
Byte 6	CH 2 pulse comparison value output								Uint 32
Byte 7									
Byte 8									
Byte 9									
Input data									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	CH 1 Status input data								Uint 8
Byte 1	CH 1 pulse number								Uint 8
Byte 2									
Byte 3									
Byte 4									
Byte 5	CH 1 latched pulse number								Uint 8
Byte 6									
Byte 7									
Byte 8									
Byte 9	CH 2 Status input data								Uint 8
Byte 10	CH 2 pulse number								Uint 8
Byte 11									
Byte 12									
Byte 13									
Byte 14	CH 2 latched pulse number								Uint 8
Byte 15									
Byte 16									
Byte 17									

Output data definition

Byte 0	
bit7~bit 3	Reserved bit
bit2	0：CH 1 Comparison value failure； 1：CH 1 The comparison value is enabled
bit1	0：enabled CH 1 Electron probe function；1：enabled CH 1 External signals trigger count zeroing function
bit0	0：CH 1 Stop counting，Clear the original count to zero；1：CH 1 Start counting
Byte 1~4	CH 1 Pulse comparison value output，Unsigned 32-bit data
Byte 5	
bit7~bit 3	Reserved bit
bit2	0：CH 2 Comparison value failure； 1：CH 2 The comparison value is enabled
bit1	0：enabled CH 2 Electron probe function；1：enabled CH 2 External signals trigger count zeroing function
bit0	0：CH 2 Stop counting，Clear the original count to zero；1：CH 2 Start counting
Byte 6~9	CH 2 Pulse comparison value output，Unsigned 32-bit data

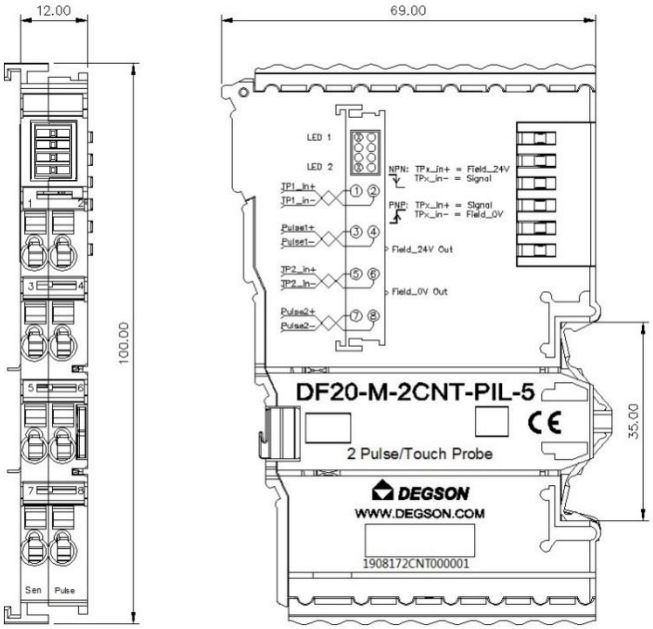
Input data definition

Byte 0	
bit7~bit3	Reserved bit
bit2	0：CH 1 count value is less than comparison value； 1：CH 1 count value is greater then comparison value
bit1	0：Never electron probe /the first channel count clear signal； 1：electron probe / the first channel count clear signal
bit0	0：CH 1 stop counting state，Clear the original count to zero； 1：CH 1 State of counting
Byte 1~4	CH 1 pulse input value，Unsigned 32-bit data
Byte 5~8	CH 1pulse input latched value，Unsigned 32-bit data
Byte 9	
bit7~bit3	Reserved bit
bit2	0：CH 2 count value is less than comparison value； 1：CH 2 count value is greater then comparison value
bit1	0：Never electron probe /the first channel count clear signal； 1：electron probe / the first channel count clear signal
bit0	0：CH 2 stop counting state，Clear the original count to zero； 1：CH 2 State of counting
Byte 10~13	CH 2 pulse input value，Unsigned 32-bit data
Byte 14~17	CH 2 pulse input latched value，Unsigned 32-bit data

4.Machinery installation

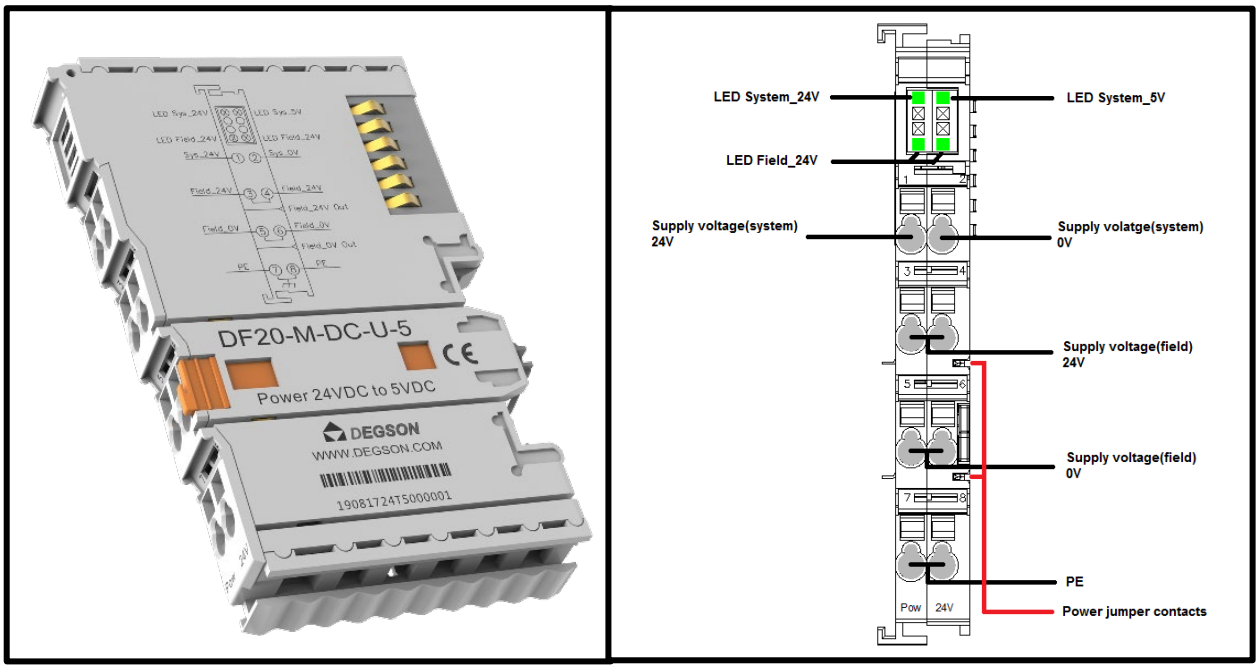
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- The operating voltage of the I/O module is 5VDC through the internal bus of the module.
- Supply system current 0.75A.
- Provides 24VDC voltage rating for external field.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Photoelectric isolated.
- Protection level IP20.

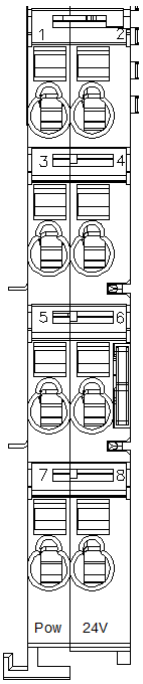


1.Specification

Technical data	
Number of channels	1
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Supply system voltage	5VDC
Supply system current	Max. 0,75A
Supply field voltage	24VDC 20%/ -15%
Supply field current (MAX)	5A
Isolation	500Vsystem/field Electrical isolation
Reverse protection	Yes
Indicators	4 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

2.Hardware Interface

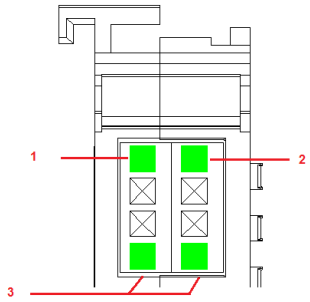
- **Wiring Terminal**



No.	Signal	Description
1	System power 24V	Power the module. Give Goldfinger 5V.
2	System power 0V	
3	Field power 24V	Power the load.
4		
5	Field power 0V	
6		
7	PE	Protect Earthing
8		

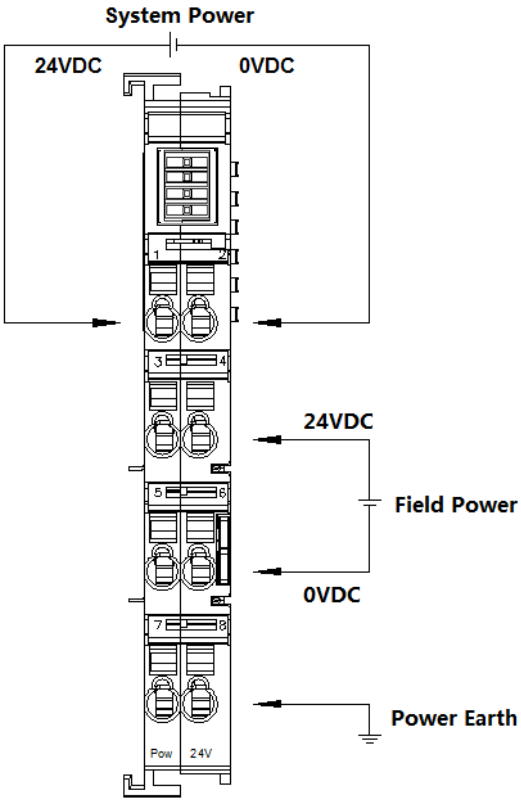
Notes：It is recommended to use two isolated 24V power supplies to provide two power supplies for the coupler respectively to achieve the best anti-interference performance.

● LED Indicator



LED Indicator	State	Definition
1	Green: ON	System Power Normal
	Green: OFF	System Power Failure
2	Green: ON	Goldfinger Power Normal
	Green: OFF	Goldfinger Power Failure
3	Green: ON	Field Power Normal
	Green: OFF	Field Power Failure

● Wiring



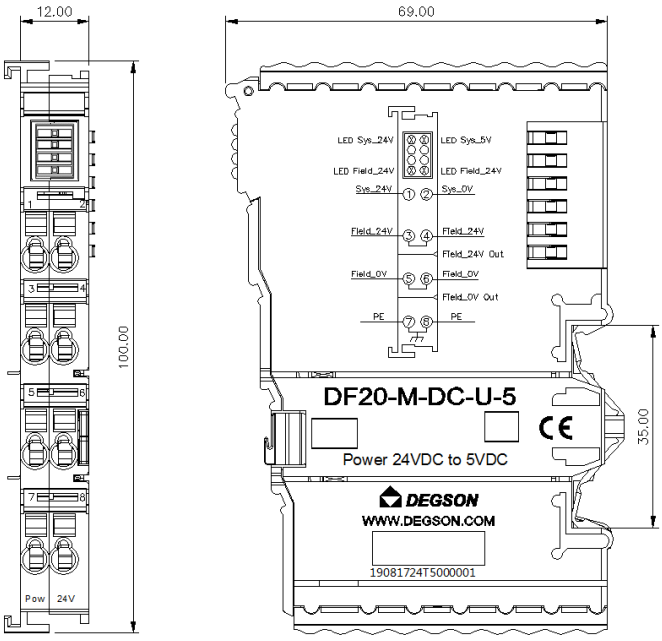
As shown in the picture:

3, 4 port internal short-circuit; 5, 6 port internal short-circuit; Internal short-circuit of ports 7 and 8.

Only three of these ports need to be connected.

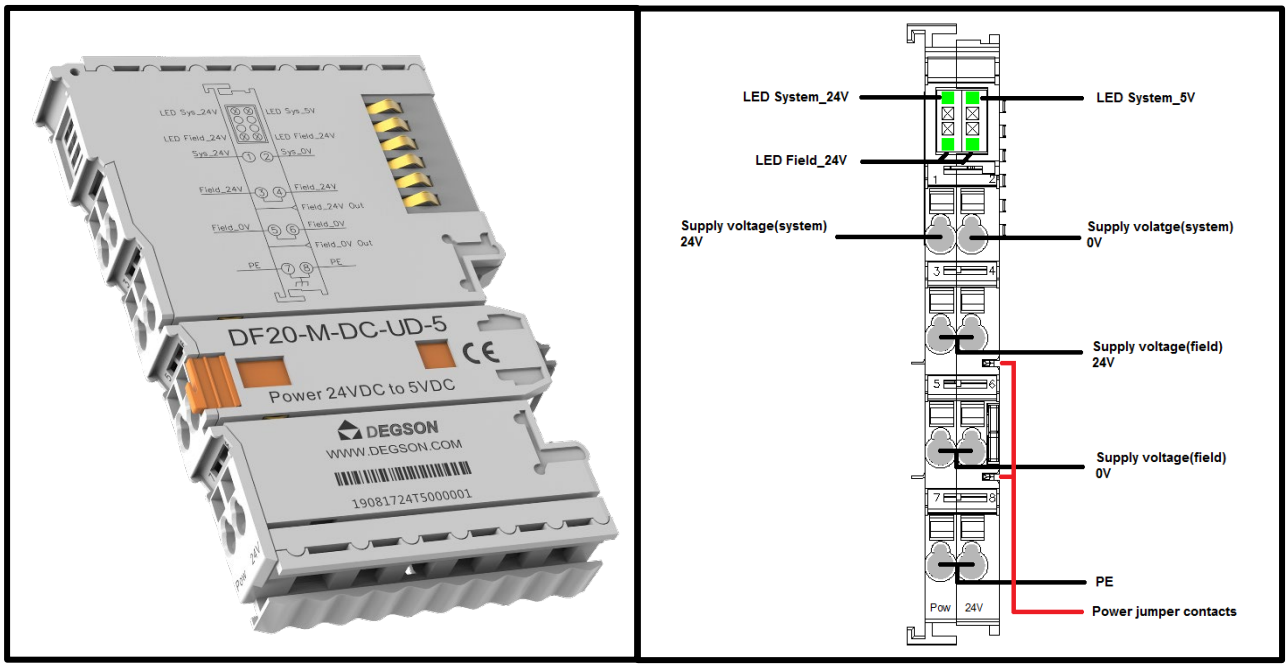
Dimension drawing

The installation size is shown in the following figure (unit: mm):



◆ 24VDC to 5VDC/2A No Isolation (DF20-M-DC-UD-5)

- The operating voltage of the I/O module is 5VDC through the internal bus of the module.
- Supply system current 2A.
- Provides 24VDC voltage rating for external field.
- The two LED indicators respectively indicate the normal operation and communication of the module.
- Field and system levels are Photoelectric No Isolation.
- Protection level IP20.

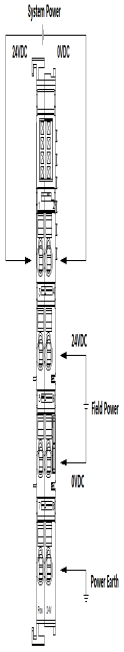


1.Specification

Technical data	
Number of channels	1
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Supply system voltage	5VDC
Supply system current	Max. 2A
Supply field voltage	24VDC 20%/ -15%
Supply field current (MAX)	8A
Reverse protection	Yes
Indicators	4 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm²/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

2.Hardware Interface

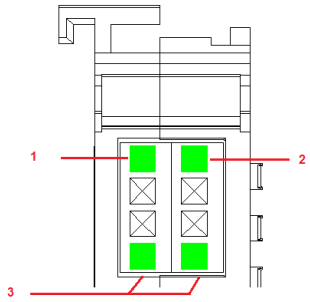
- **Wiring Terminal**



No.	Signal	Description
1	System power 24V	Power the module. Give Goldfinger 5V.
2	System power 0V	
3	Field power 24V	Power the load.
4		
5	Field power 0V	
6		
7	PE	Protect Earthing
8		

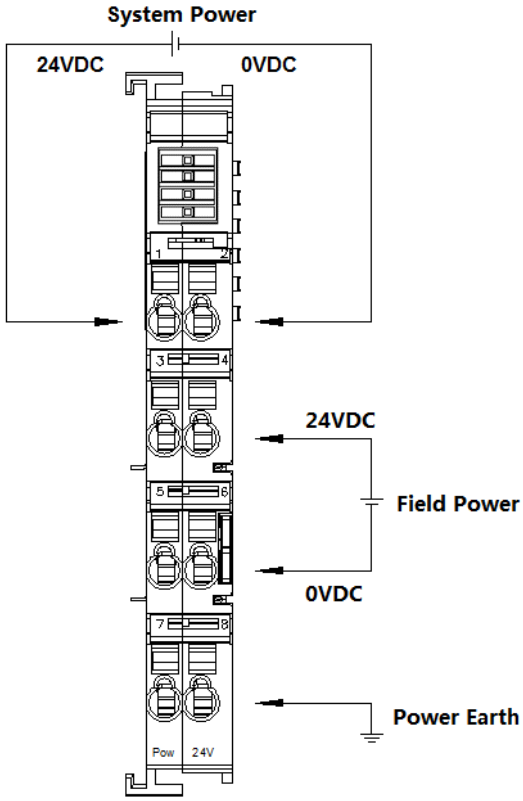
Notes：It is recommended to use two isolated 24V power supplies to provide two power supplies for the coupler respectively to achieve the best anti-interference performance.

● LED Indicator



LED Indicator	State	Definition
1	Green: ON	System Power Normal
	Green: OFF	System Power Failure
2	Green: ON	Goldfinger Power Normal
	Green: OFF	Goldfinger Power Failure
3	Green: ON	Field Power Normal
	Green: OFF	Field Power Failure

● Wiring



As shown in the picture:

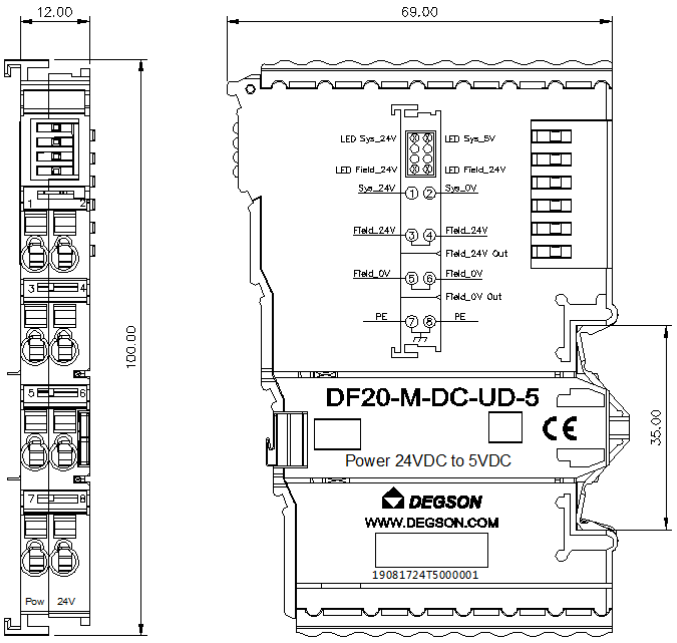
3, 4 port internal short-circuit; 5, 6 port internal short-circuit; Internal short-circuit of ports 7 and 8.

Only three of these ports need to be connected.

3.Machinery installation

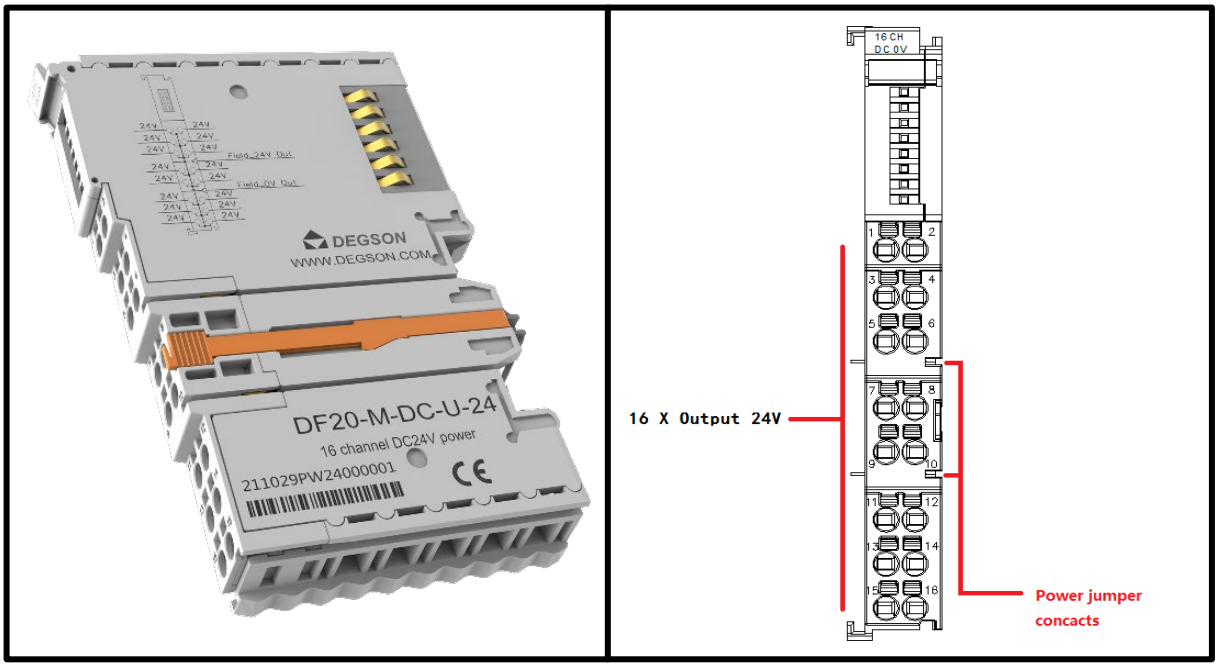
● Dimension drawing

The installation size is shown in the following figure (unit: mm):



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

- Application and connection type independent of fieldbus.
- Provides 16 channel 24VDC voltage rating for external field.
- Protection level IP20.

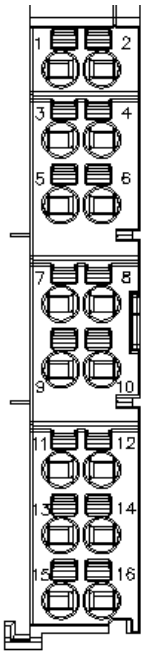


1.Specification

Technical data	
Number of channels	16
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Supply field voltage	24VDC（-15%～+20%）
Supply field current (MAX)	5A
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

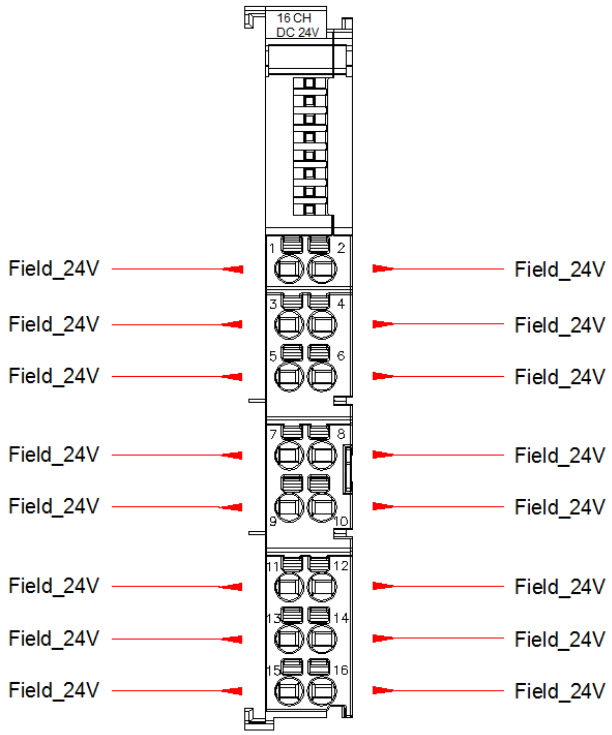
2.Hardware Interface

- **Wiring Terminal**



No.		Signal	Description
1	2	Field power supply 24VDC	Provides 16 channel 24VDC voltage rating for external field.
3	4		
5	6		
7	8		
9	10		
11	12		
13	14		
15	16		

- **Wiring**



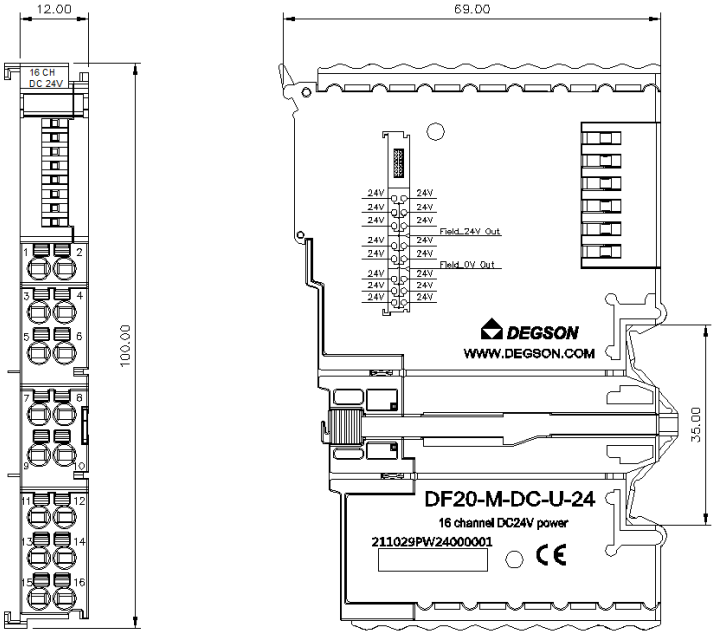
As shown in the picture:

Provides 16 channel 24VDC voltage rating for external field.

3.Machinery installation

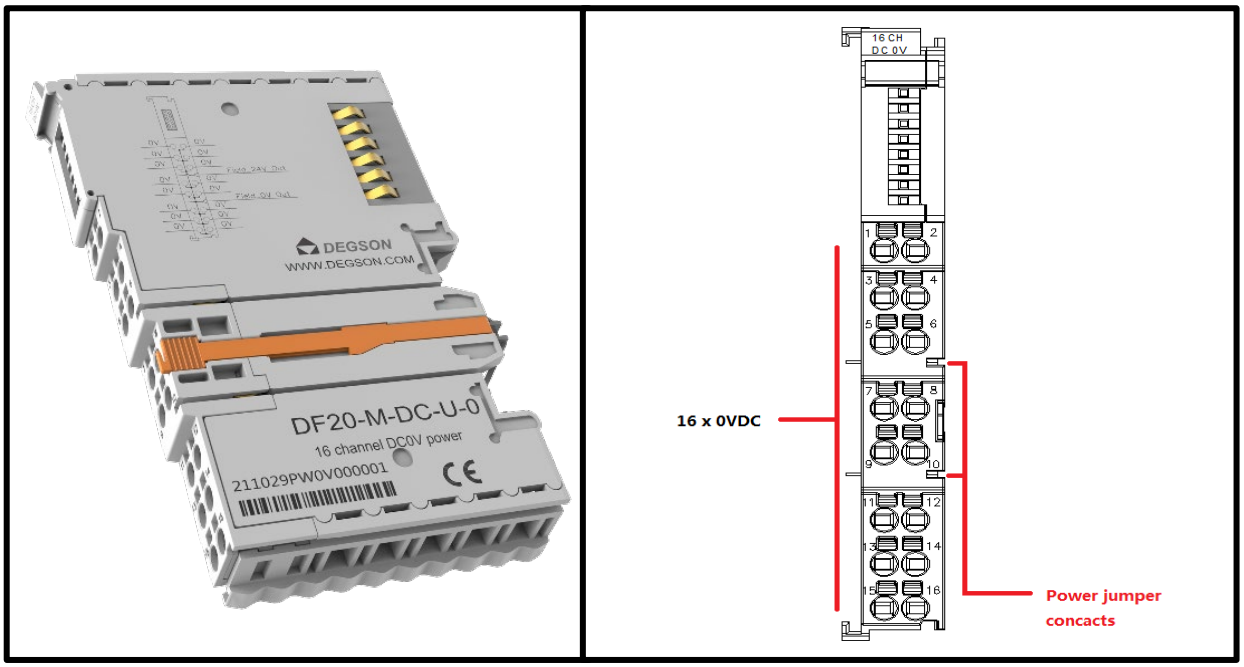
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



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

- Application and connection type independent of fieldbus.
- Provides 16 channel 0VDC voltage rating for external field.
- Protection level IP20.

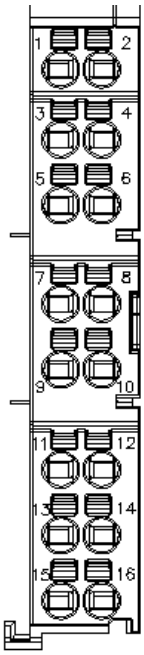


1.Specification

Technical data	
Number of channels	16
Working voltage	0VDCvia power jumper contacts
Supply field voltage	0VDC
Supply field current (MAX)	5A
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm^2/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

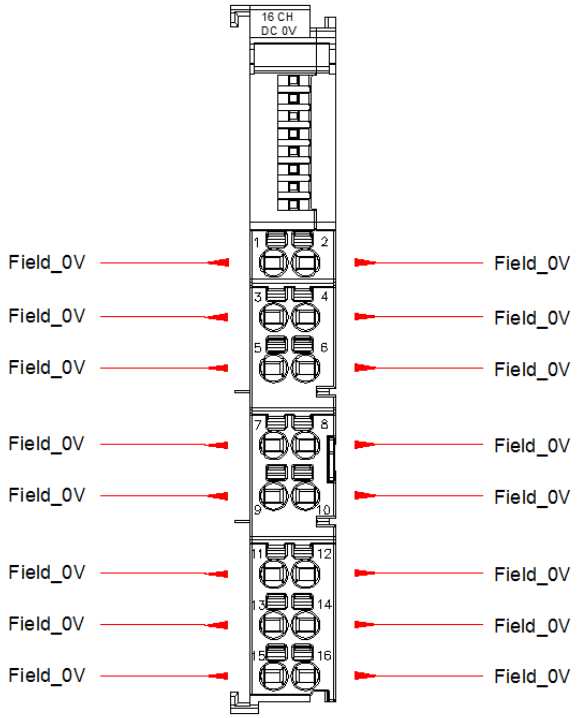
2.Hardware Interface

- **Wiring Terminal**



No.		Signal	Description
1	2	Field power supply 0VDC	Provides 16 channel 0VDC voltage rating for external field.
3	4		
5	6		
7	8		
9	10		
11	12		
13	14		
15	16		

- **Wiring**



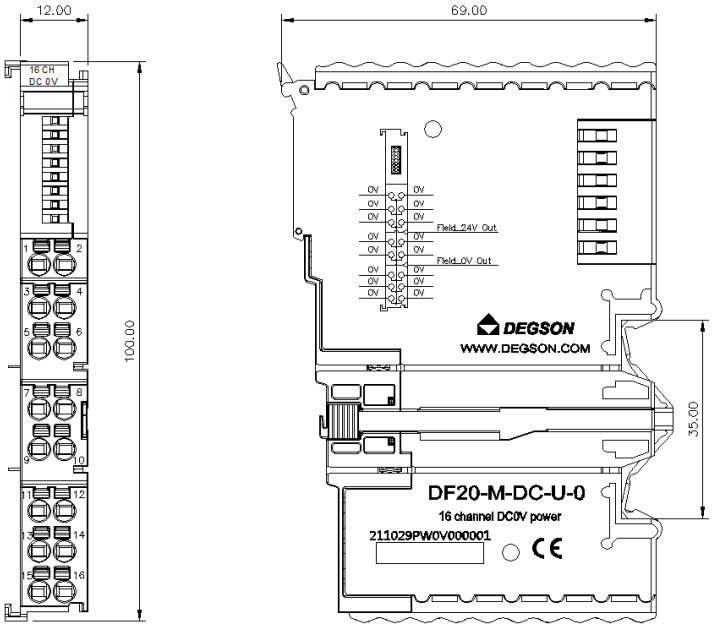
As shown in the picture:

Provides 16 channel 0VDC voltage rating for external field.

3.Machinery installation

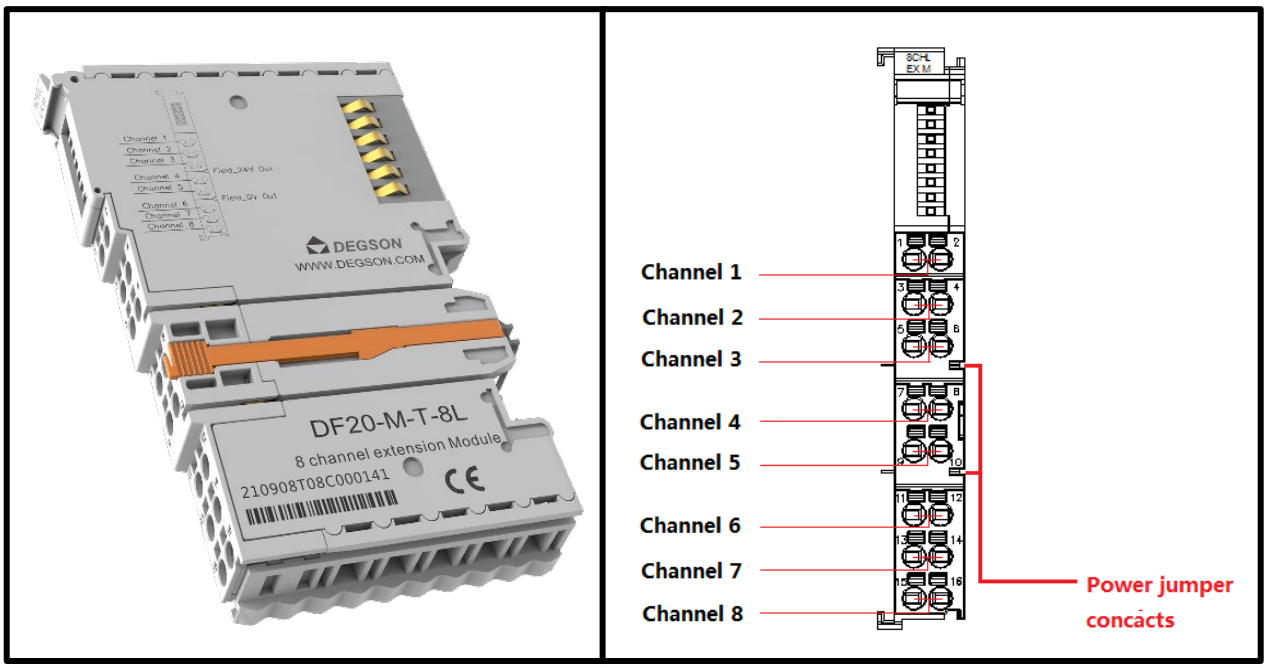
- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



◆ 8 channel /2 line extended (DF20-M-T-8L)

- Application and connection type independent of fieldbus.
- Provides 8-channel 2-wire extensions for external field.
- Protection level IP20.

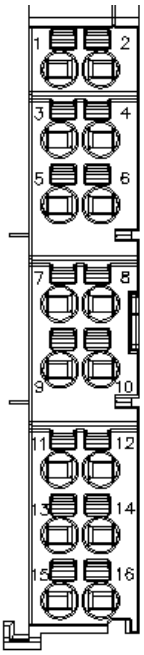


1.Specification

Technical data	
Number of channels	8
Working voltage	0V～36VDC
Supply field voltage	Voltage distribution
Supply field current (MAX)	5A
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	16 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～1.5mm²/28～16AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

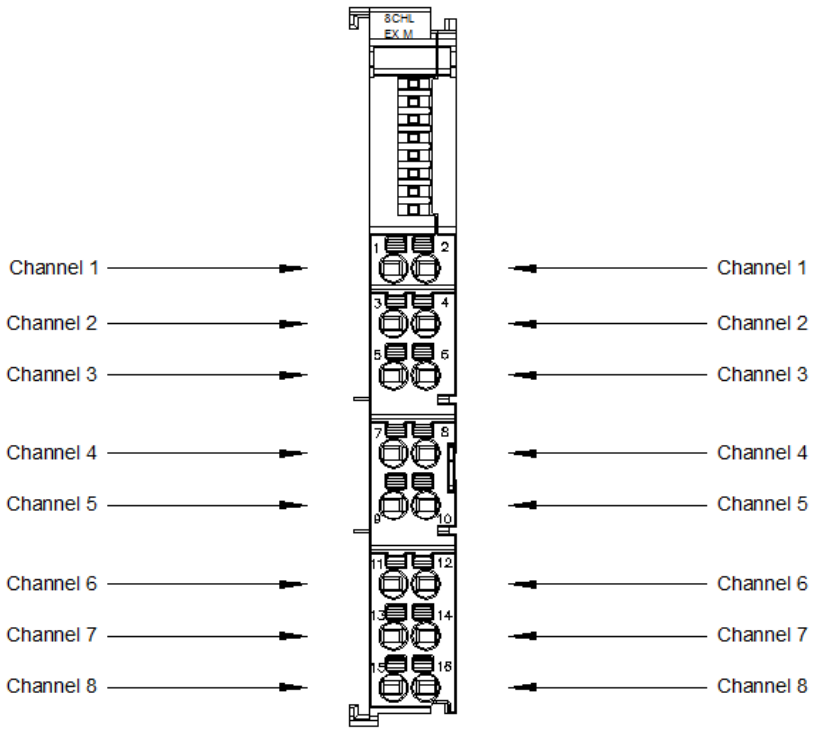
2.Hardware Interface

- **Wiring Terminal**



No.		信号	说明
1	2	Extended CH 1	Provides 8-channel 2-wire extensions for external field.
3	4	Extended CH 2	
5	6	Extended CH 3	
7	8	Extended CH 4	
9	10	Extended CH 5	
11	12	Extended CH 6	
13	14	Extended CH 7	
15	16	Extended CH 8	

- **Wiring**



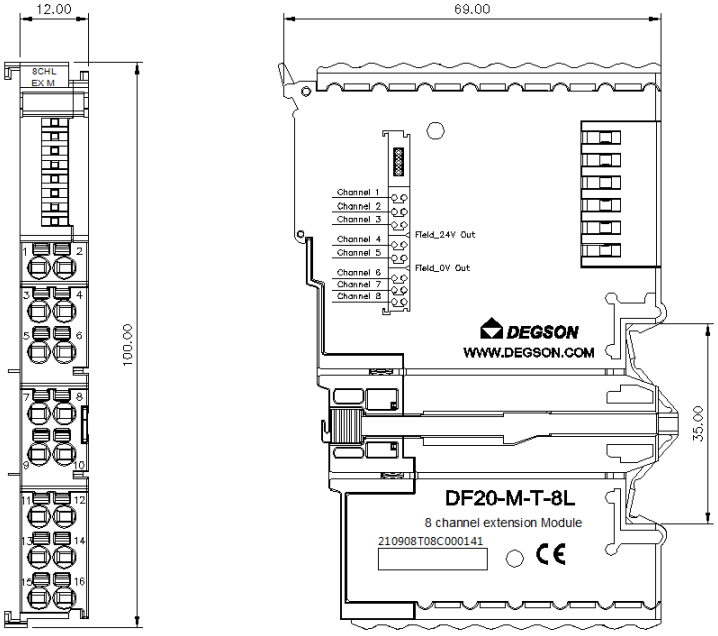
As shown in the picture:

Provides 8-channel 2-wire extensions for external field, Convenient cable routing.

3.Machinery installation

- **Dimension drawing**

The installation size is shown in the following figure (unit: mm):



Four.Communication example

◆ DF20-C-EN-IP Adapter

5、RSLogix 5000 Usage method

1.Preparatory work

1）Module model and quantity:

Type	Model	Quantity
Adapter	DF20-C-EN-IP	1
IO module	DF20-M-16DI-P	1
	DF20-M-16DO-P	1

2）One computer, pre-installed RSLogix 5000 software

3）AB PLC 1769-L23E-QB1B

4）One switching power supply）

5）EDS file：DF20-C-EN-IP_V1.01

6）Module process data configuration table

- **IO module process data**

Each module will assign different data lengths due to different functions and channel numbers.

As shown in Table 6.1, it is the data length allocation table of I/O module.

Table 6.1

Module model	Up process data length（Byte）		Down process data length（Byte）	
	Assigned value	Actual used value	Assigned value	Actual used value
DF20-M-8DI-N	2	1	/	/
DF20-M-8DI-P	2	1	/	/
DF20-M-16DI-N	2	2	/	/
DF20-M-16DI-P	2	2	/	/
DF20-M-8DO-N	/	/	2	1
DF20-M-8DO-P	/	/	2	1
DF20-M-16DO-N	/	/	2	2
DF20-M-16DO-P	/	/	2	2

DF20-M-4AI-U-0	8	8	/	/
DF20-M-4AI-U-1	8	8	/	/
DF20-M-4AI-I-2	8	8	/	/
DF20-M-4AI-I-3	8	8	/	/
DF20-M-4AI-U-4	8	8	/	/
DF20-M-4AI-I-5	8	8	/	/
DF20-M-2LC-S-5	4	4	/	/
DF20-M-2RTD-PT	4	4	/	/
DF20-M-4TC-KETJ	8	8	8	8
DF20-M-4AO-U-0	/	/	8	8
DF20-M-4AO-U-1	/	/	8	8
DF20-M-4AO-I-2	/	/	8	8
DF20-M-4AO-I-3	/	/	8	8
DF20-M-4AO-U-4	/	/	8	8
DF20-M-4AO-I-5	/	/	8	8
DF20-M-1CNT-EL-5	10	10	2	2
DF20-M-1CNT-EL-4	10	10	2	2
DF20-M-2CNT-PIL-5	18	18	10	10
DF20-M-2CNT-PIL-4	18	18	10	10

As shown in Table 6.2, it is Input/output data meaning, data length and datatype of each modules.

Table 6.2

Module model	Inputs/Outputs data	Byte	Data type	Notes
DF20-M-8DI-N(DF20-M-8DI-P)	Input data	1	8bit	/
DF20-M-8DO-N(DF20-M-8DO-P)	Output data	1	8bit	/
DF20-M-16DI-N(DF20-M-16DI-P)	Input data	2	16bit	/
DF20-M-16DO-N(DF20-M-16DO-P)	Output data	2	16bit	/
DF20-M-4AI-U-0	CH 1 Input data	2	Int16	-10V~10V(-27648~27648)
	CH 2 Input data	2	Int16	
	CH 3 Input data	2	Int16	
	CH 4 Input data	2	Int16	
DF20-M-4AI-U-1	CH 1 Input data	2	Int16	0~10V(0~27648)
	CH 2 Input data	2	Int16	
	CH 3 Input data	2	Int16	
	CH 4 Input data	2	Int16	
DF20-M-4AI-U-4	CH 1 Input data	2	Int16	-10V~10V(-27648~27648) or 0~10V(0~27648)
	CH 2 Input data	2	Int16	

	CH 3 Input data	2	Int16	
	CH 4 Input data	2	Int16	
DF20-M-4AI-I-2 (DF20-M-4AI-I-3/ DF20-M-4AI-I-5)	CH 1 Input data	2	Uint16	0~20ma(0~27648) or 4~20ma(0~27648)
	CH 2 Input data	2	Uint16	
	CH 3 Input data	2	Uint16	
	CH 4 Input data	2	Uint16	
DF20-M-2LC-S-5	Command Output data	2	Uint16	/
	Status Input data	2	Uint16	/
	CH 1 Input data	2	Int16	Input signal 0~10mv(0~32767)
	CH 2 Input data	2	Int16	
DF20-M-2RTD-PT	CH 1 temperature Input data	2	Int16	Each digit represents 0.1 degrees, for example 345 represents 34.5 degrees; In addition, -32768 indicates that the sensor is
	CH 2 temperature Input data	2	Int16	
DF20-M-4TC-KETJ	CH 1 temperature Compensated output	2	Int16	/
	CH 2 temperature Compensated output	2	Int16	
	CH 3 temperature Compensated output	2	Int16	
	CH 4 temperature Compensated output	2	Int16	
DF20-M-4TC-KETJ	CH 1 temperature Input data	2	Int16	Each digit represents 0.1 degrees, for example 345 represents 34.5 degrees; In addition, -32768 indicates that the sensor is disconnected
	CH 2 temperature Input data	2	Int16	
	CH 3 temperature Input data	2	Int16	
	CH 4 temperature Input data	2	Int16	
DF20-M-4AO-U-0	CH 1 Output data	2	Int16	-10V~10V(-27648~27648)
	CH 2 Output data	2	Int16	
	CH 3 Output data	2	Int16	
	CH 4 Output data	2	Int16	
DF20-M-4AO-U-1	CH 1 Output data	2	Uint16	0~10V(0~27648)
	CH 2 Output data	2	Uint16	
	CH 3 Output data	2	Uint16	
	CH 4 Output data	2	Uint16	
DF20-M-4AO-I-2 (DF20-M-4AO-I-3)	CH 1 Output data	2	Uint16	0~20ma(0~27648) or 4~20ma(0~27648)
	CH 2 Output data	2	Uint16	
	CH 3 Output data	2	Uint16	
	CH 4 Output data	2	Uint16	
DF20-M-1CNT-EL-5 (DF20-M-1CNT-EL-4)	Command Output data	2	Uint16	/
	Status Input data	2	Uint16	/

	Encoder sampling data	4	Int32	/
	Latched position data	4	Int32	/
DF20-M-2CNT-PIL-5 (DF20-M-2CNT-PIL-4)	CH 1 command Output data	1	Uint8	/
	CH 1 Pulse comparison output	4	Uint32	/
	CH 2 command Output data	1	Uint8	/
	CH 2 Pulse comparison output	4	Uint32	/
	CH 1 Status input data	1	Uint8	/
	CH 1 Pulse number	4	Uint32	/
	CH 1 latched pulses Number	4	Uint32	/
	CH 2 Status input data	1	Uint8	/
	CH 2 Pulse number	4	Uint32	/
	CH 2 latched pulses Number	4	Uint32	/

2.Set the DF20-C-EN-IP IP address

- **IP Setting Tool sets the IP address**

Install the PSUpdate100 software provided by the supplier, as shown in Figure 6-1.

Figure 6-1

Open IP Setting Tool and select the network adapter, as shown in Figure 6-2.

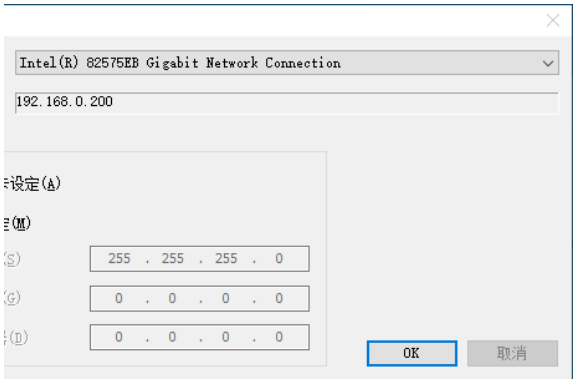


Figure 6-2

Use the IP Setting Tool to scan for the adapter and set its IP address, as shown in Figure 6-3(a) to Figure 6-3(d).

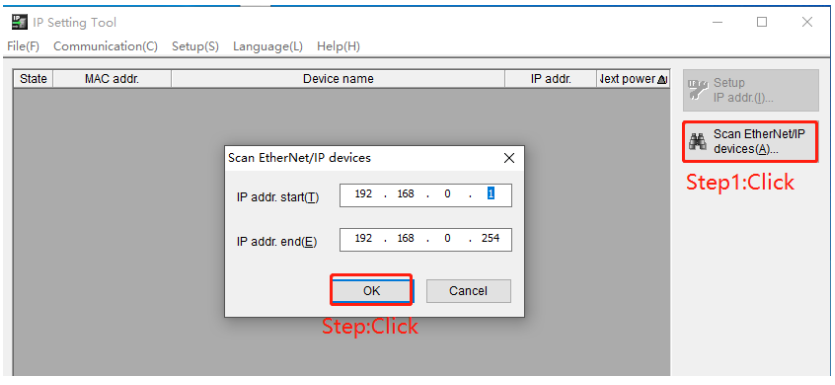


Figure 6-3(a)

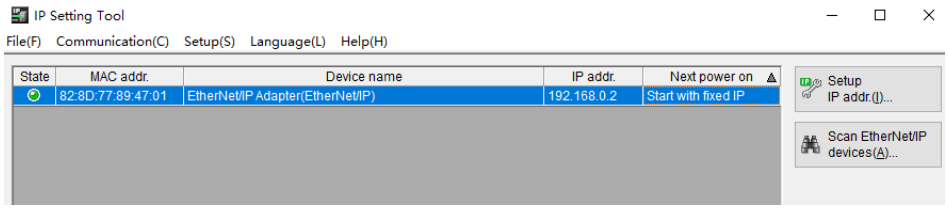


Figure 6-3(b)

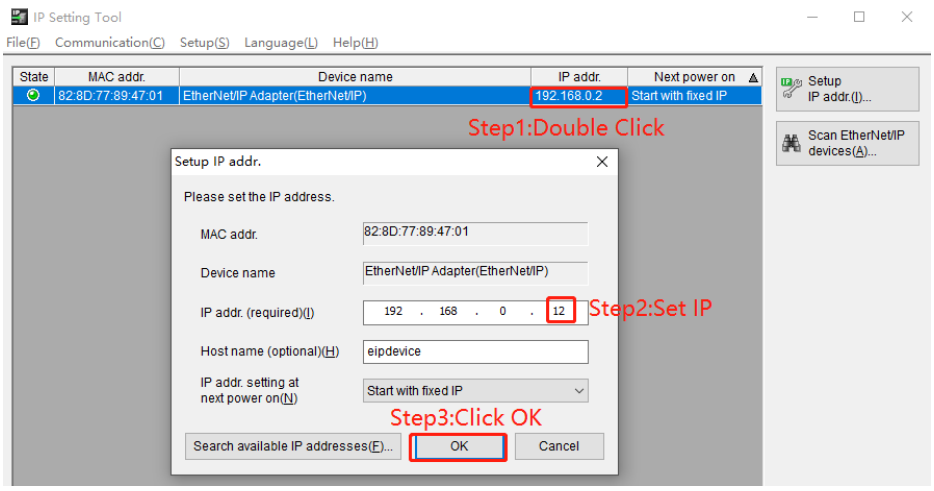


Figure 6-3 (c)

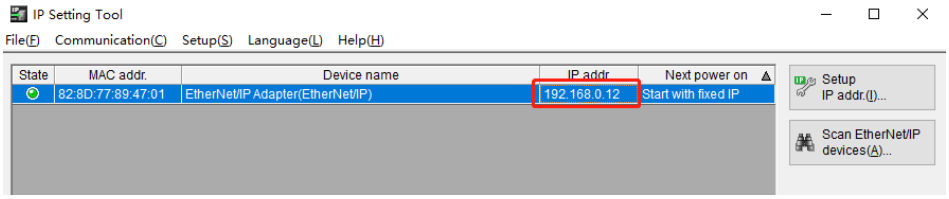


Figure 6-3 (d)

Change the network segment of the adapter, as shown in Figure 6-3(a) to Figure 6-3(b).

As shown in Figure 6-3 (b), after the network segment is modified, the software cannot be reconnected to the adapter automatically, and "Failed" is displayed. **The adapter needs to be powered on again for the new IP address to take effect.**

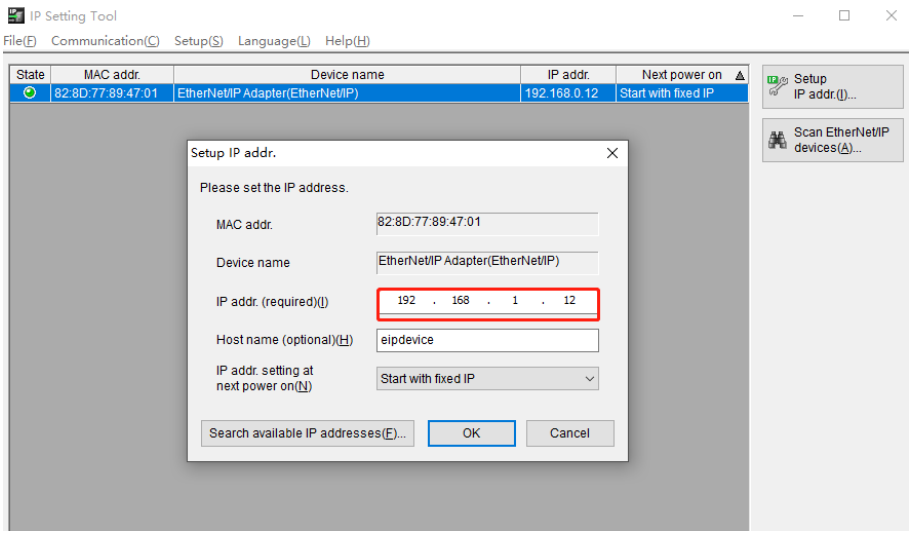


Figure 6-3 (a)

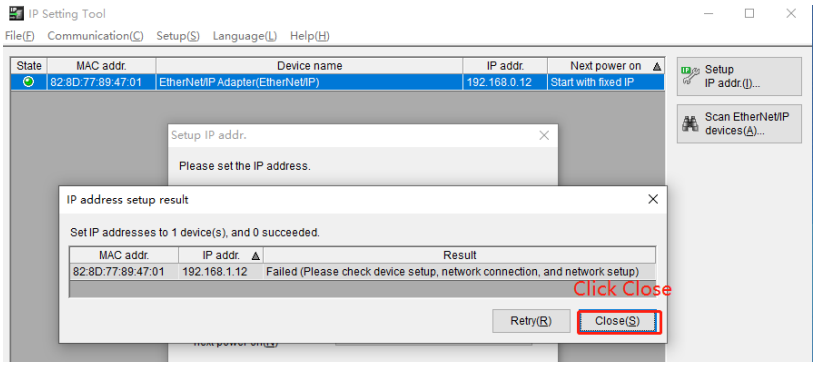


Figure 6-3 (b)

As shown in Figure 6-4(a), modify the computer network segment, reopen the IP Setting Tool, and scan the coupler, as shown in Figure 6-4(b).

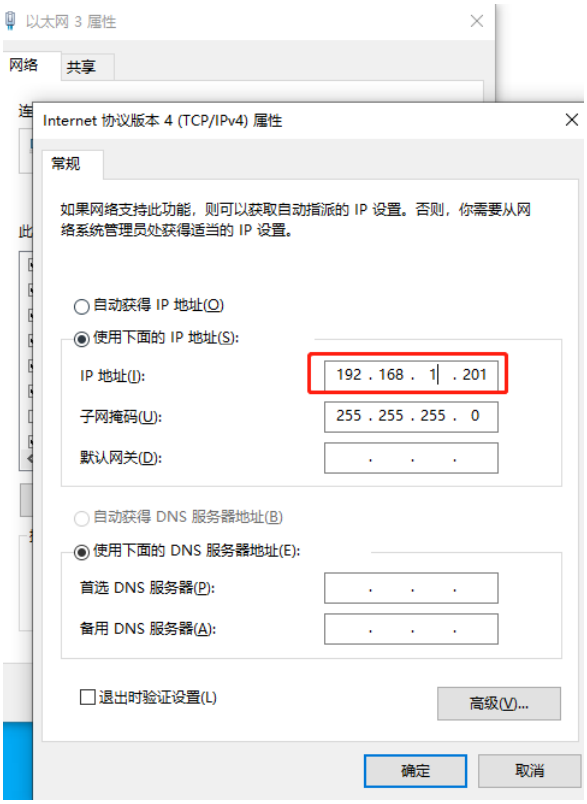


Figure 6-4 (a)

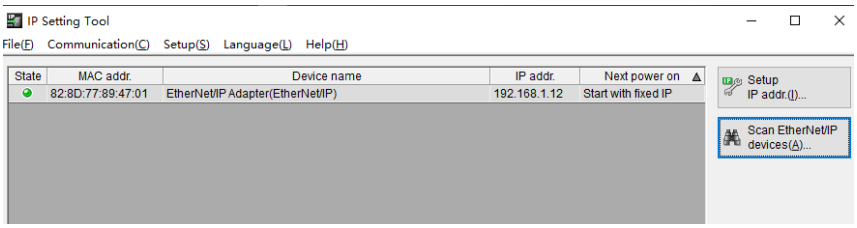


Figure 6-4 (b)

- **Reset IP address**

If the IP address is forgotten, lost, or otherwise abnormal, the adapter can reset the module by using the IP address reset function and restore factory Settings by using the special operation of the DIP switch. The specific operations are as follows:

As shown in Figure 6-5(a), set the DIP switch to 254 and power on the module. The default IP address of the module is 192.168.0.254.

Figure 6-5 (a)

After the module is powered on, flip the DIP switch to 0 when there is no power on, as shown in (b) in Figure 6-5.

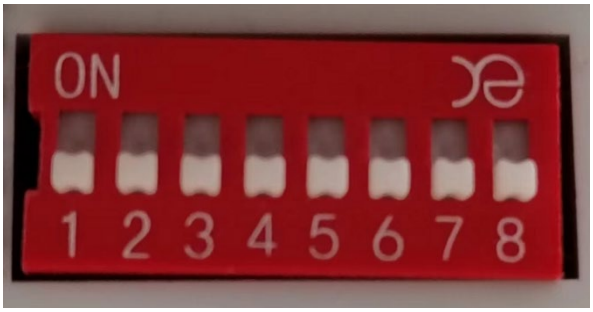


Figure 6-5 (b)

Then set the IP address of the coupler as described in section 4.1.2 or 4.1.3.

3. RSLogix 5000 config

IP setting and modification reference

In this process, the IP address of the AB PLC is 192.168.1.13 and the IP address of the DF20-C-EN-IP adapter is 192.168.1.3. New project, open RSLogix 5000 software,click “File”,then click “new project”, select a PLC model, click OK, as shown in Figure 6-6.

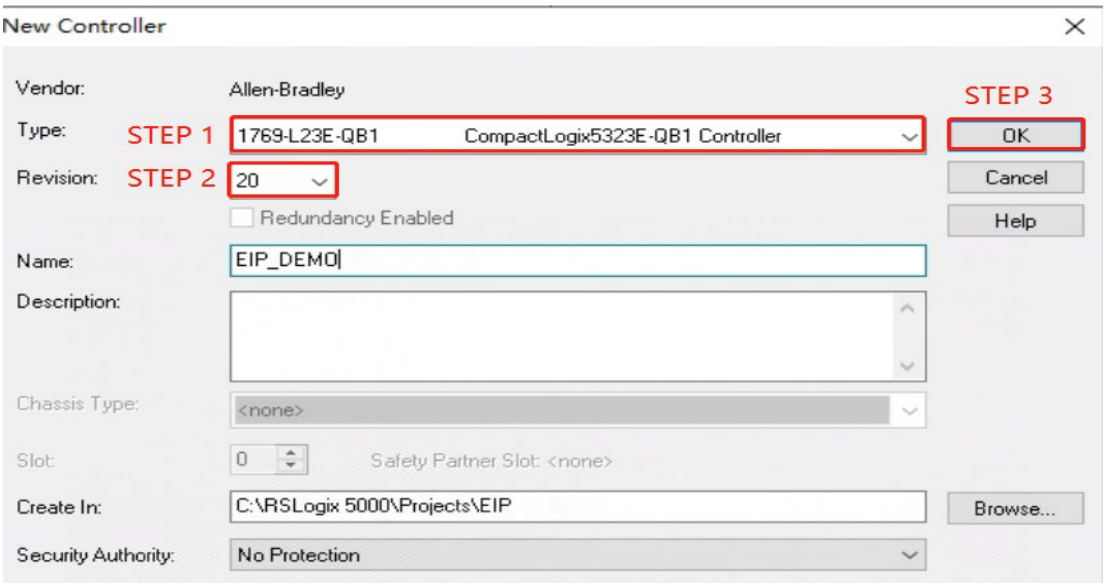


Figure 6-6

➢ Installing EDS Files

Figure 6-7

Follow the preceding steps to install the EDS, as shown in Figure 6-8 to 6-16.

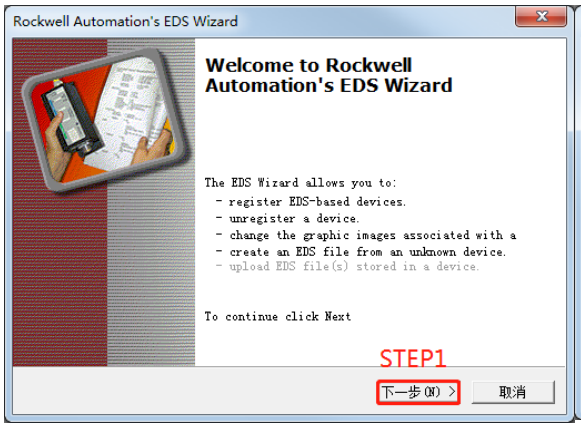


Figure 6-8

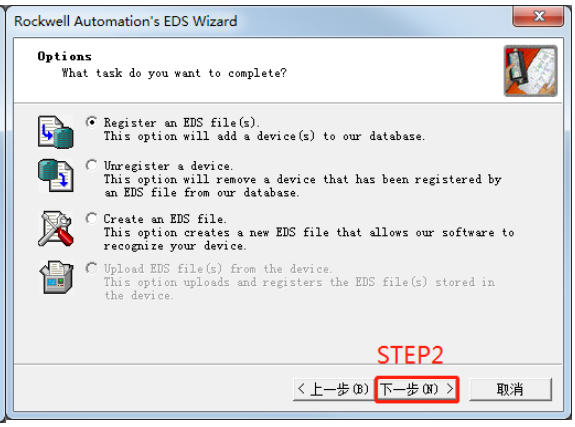


Figure 6-9

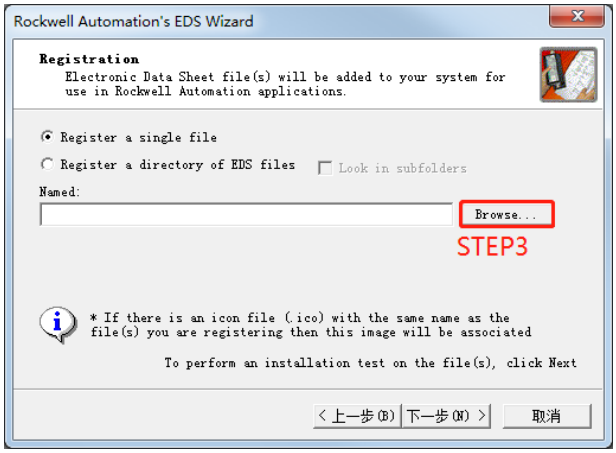


Figure 6-10

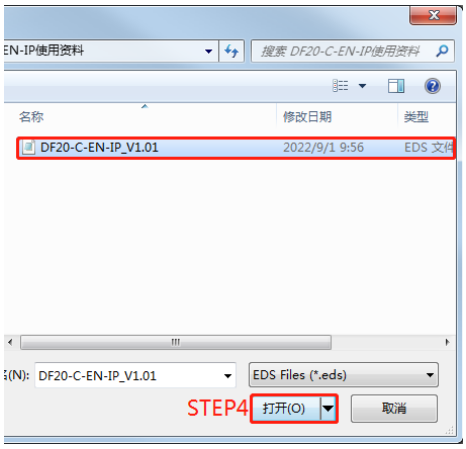


Figure 6-11

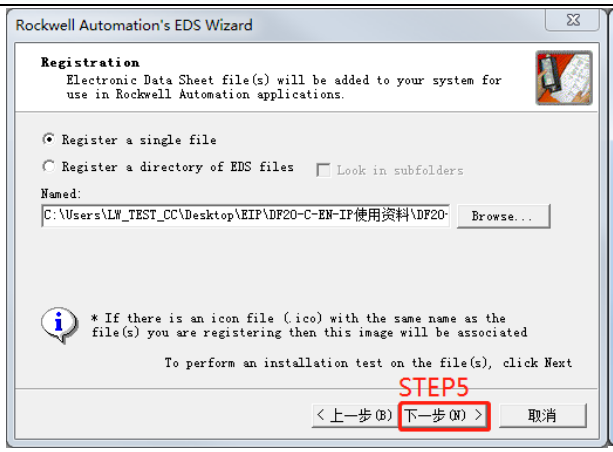


Figure 6-12

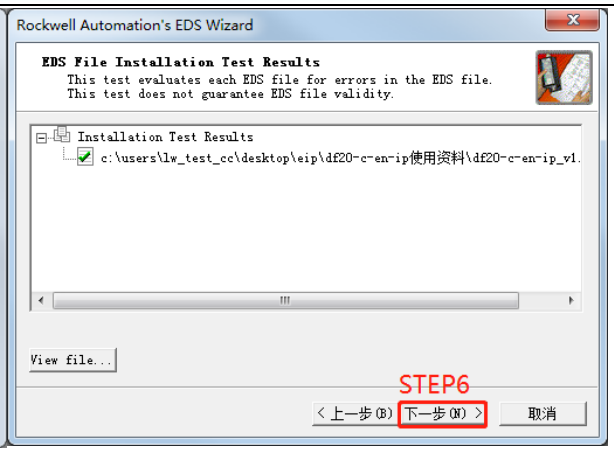


Figure 6-13

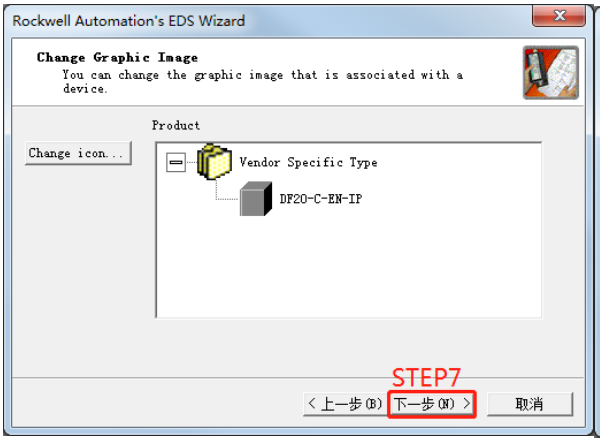


Figure 6-14

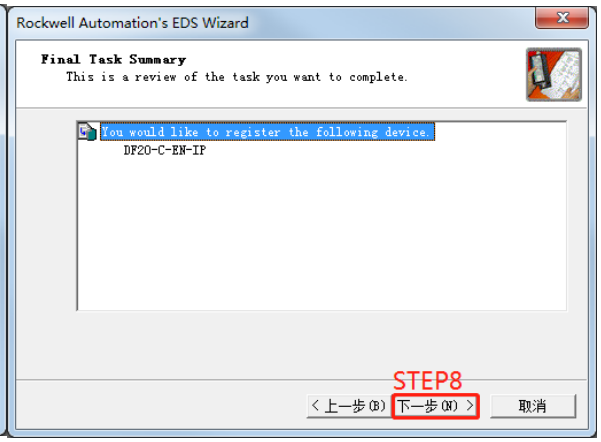


Figure 6-15

Figure 6-16

Add DF20-C-EN-IP to the configuration. As shown in the picture, right-click to add a new module, select DF20-C-EN-IP module in the list, and click "Create".

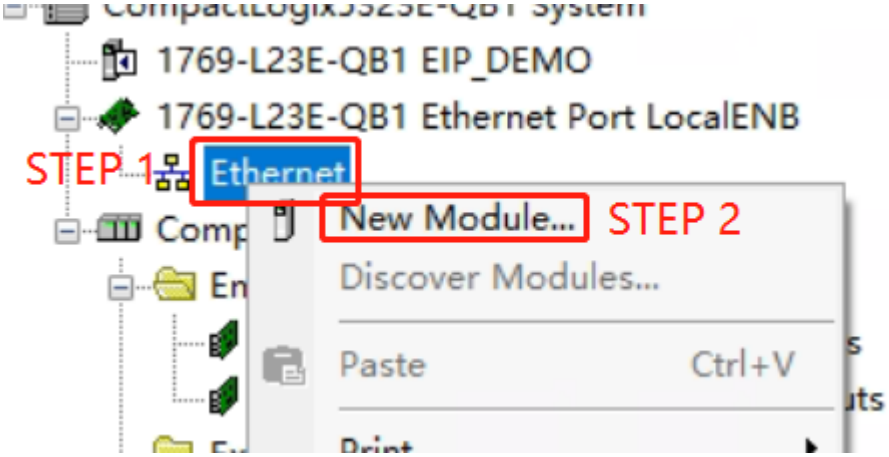


Figure 6-17

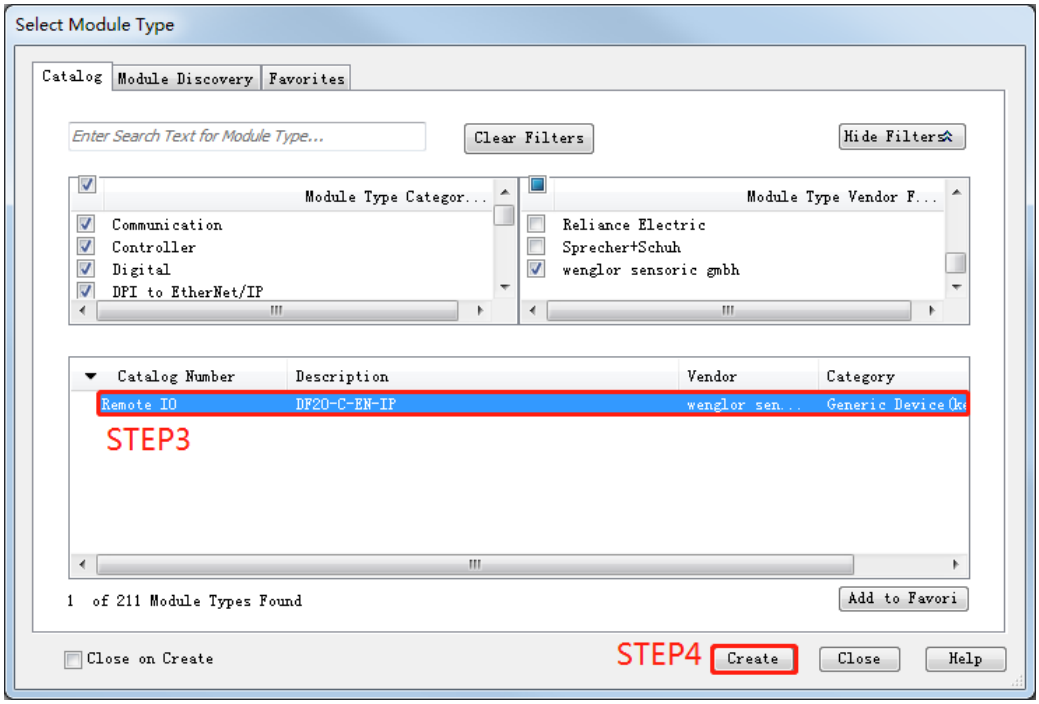


Figure 6-18

Set module parameters. Enter the module name and IP address, and click “Change”. Figure 6-19 shows the configuration table based on the actual module topology (in this example, DF20-M-16DI-P+DF20-M-16DO-P) provided by the manufacturer in “DF20-C-EN-IP Configuration table

_V1.0". The Alarm Moudle is the alarm information module of the coupler and is used to display module error information. Then insert DF20-M-16DI-P and DF20-M-16DO--P in slot 2 and slot 3, respectively, calculate the Size of "Produced Data Size" and "Consumed Data Size", and fill these two data into the input/output field. Figure 6-20 to 6-21 shows the configuration process.

No.	IO	Produced Data Size (byte)	Consumed Data Size (byte)
1	AlarmMoudle	2	0
2	DF20-M-16DI-P	2	0
3	DF20-M-16DO-P	0	2

Figure 6-19

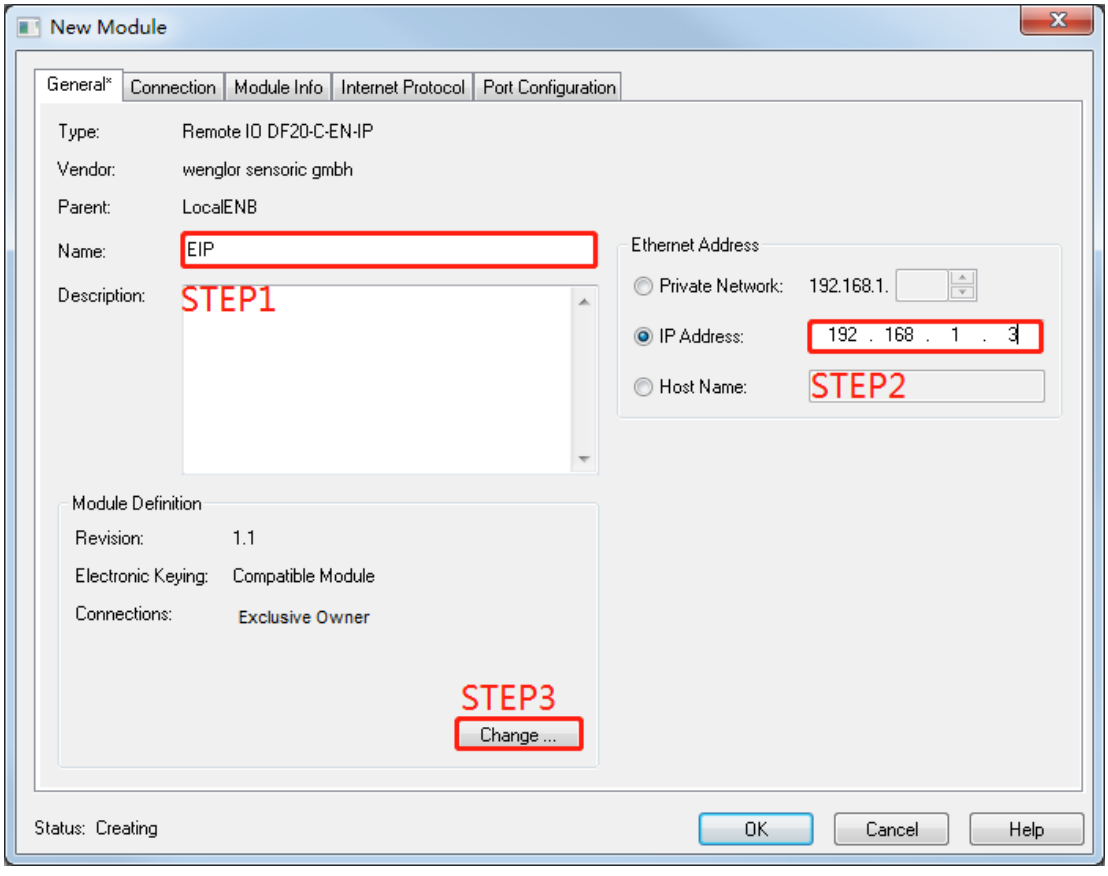


Figure 6-20

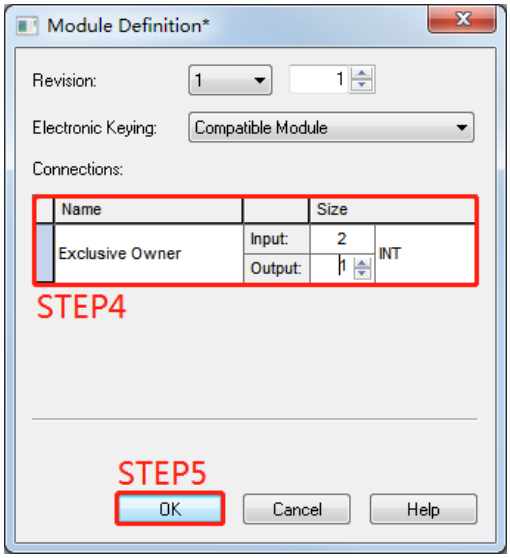


Figure 6-21

Select the PLC model, download the program to PLC, and turn the key to RUN mode.

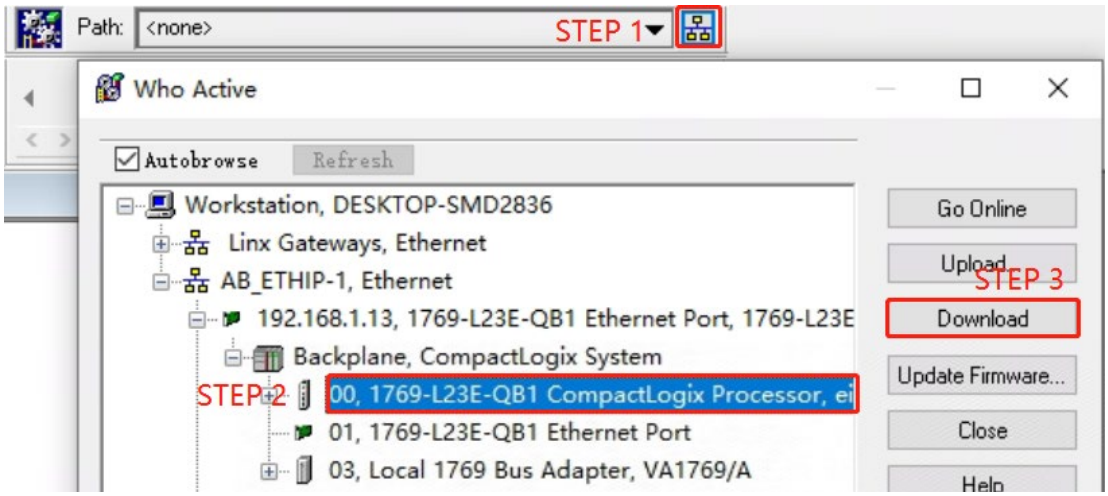


Figure 6-22

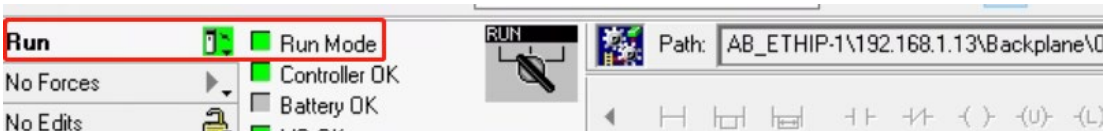


Figure 6-23

4. Alarm Moudle data description

Double-click to open Controller Tags and enable I/O Forces

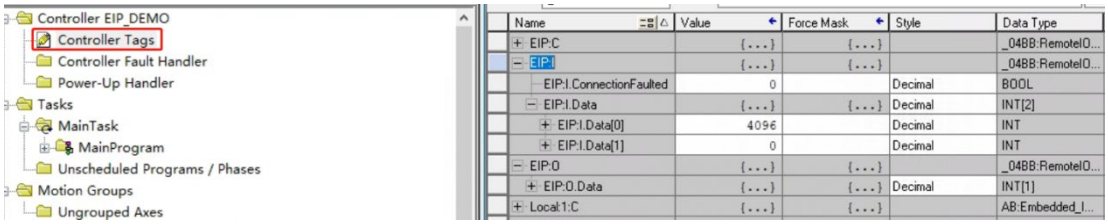


Figure 6-24

Enable All I/O Forces.

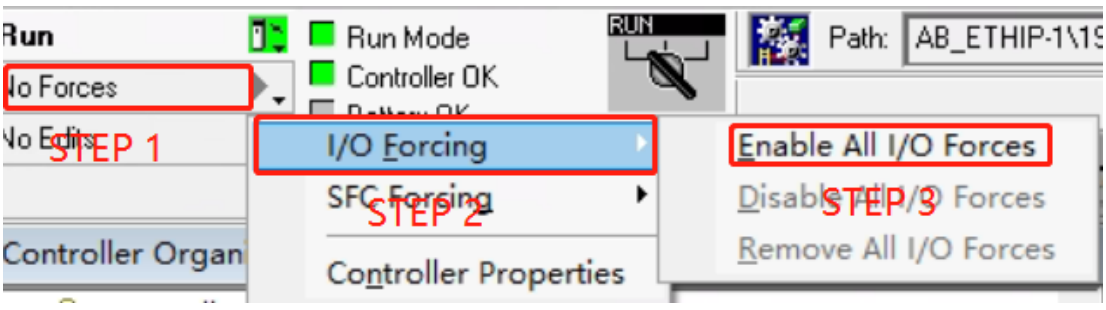


Figure 6-25

EIP:I. Date[0] channel indicates the Alarm module information. If 4096 is displayed, the PLC is connected. To facilitate understanding of the alarm module, the hexadecimal value is 16#1000, where 1 indicates that the PLC is connected. As shown in Figure 6-26.）

When the I/O module behind the slave device DF20-C-EN-IP is faulty or data is lost, the ERR indicator is steady on, and the error information is displayed in the Alarm module. If the second I/O module is faulty or data is lost during normal operation, the input information is as shown in Figure 6-27.）

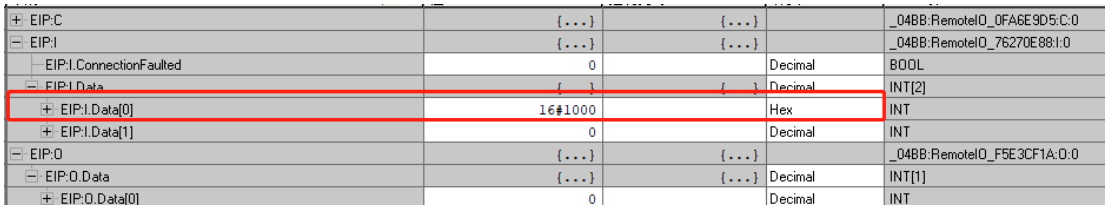


Figure 6-26

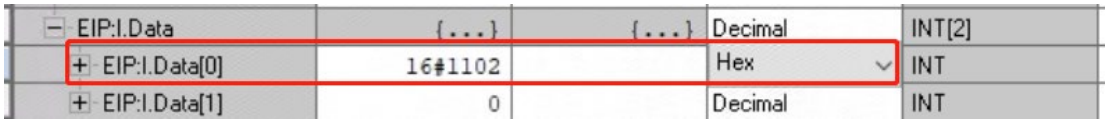


Figure 6-27

5. IO data read/write

EIP:I. Date[1] channel indicates the DF20-M-16DI-P module, as shown in Figure 6-28, indicating that the input level of the first channel is high.

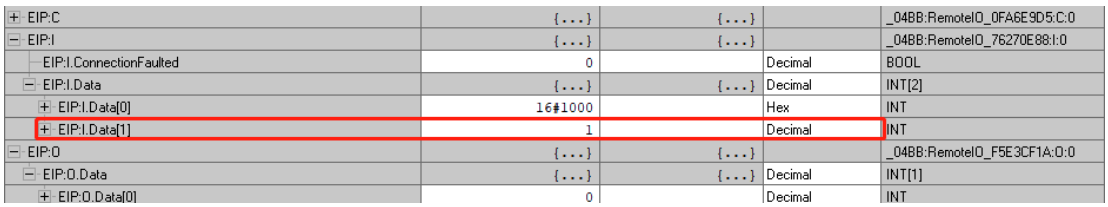


Figure 6-28

EIP:O.Date[0] channel indicates the DF20-M-16DO-P module, as shown in Figure 6-29,

indicating that the first channel outputs a high level.）

⊞ EIP:I.Data[0]	4096		Decimal	INT
⊞ EIP:I.Data[1]	0		Decimal	INT
⊟ EIP:O	{...}	Forced		_04BB:RemoteIO...
⊟ EIP:O.Data	{...}	{...}	Decimal	INT[1]
⊞ EIP:O.Data[0]	0	1	Decimal	INT

Figure 6-29