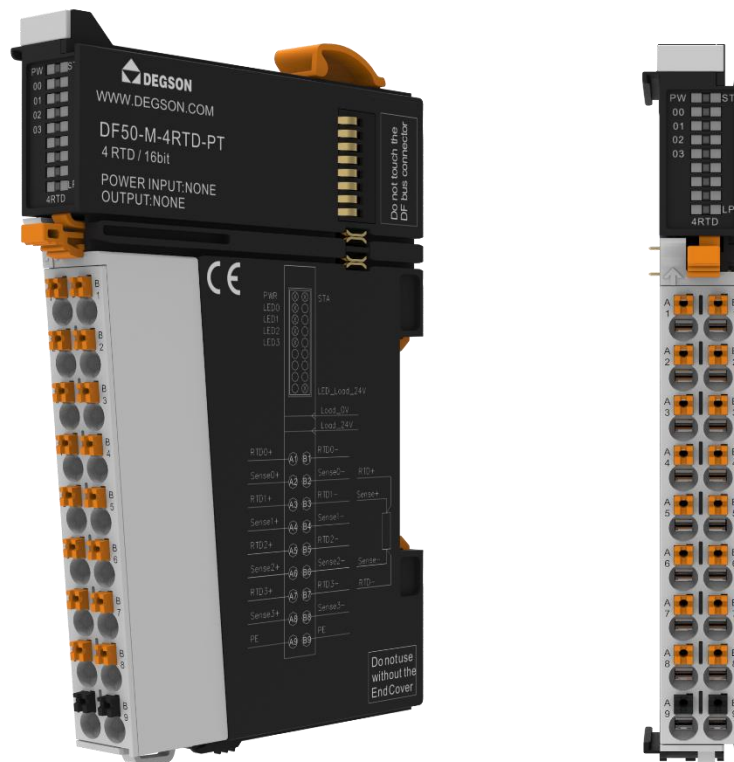


3.10 4 channel thermal resistance measurement (DF50-M-4RTD-PT)

- This module adopts 4-channel thermal resistance measurement and supports 13 types of conventional thermal resistors.
- Support four sensors.
- Support 2-wire, 3-wire, and 4-wire sensors.
- Two LED indicators indicate that the module is operating normally and communication is normal.
- Each channel is equipped with LED indicator lights.
- Magnetic isolation between the on-site layer and the system layer.
- Transmit in 16 resolution format.
- Protection level IP20.



3.10.1 Specification parameters

Technical Information

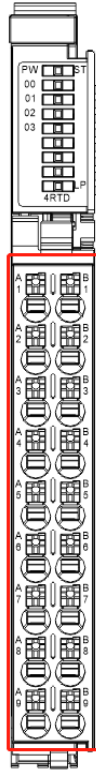
4-channel thermal resistance test
(DF50-M-4RTD-PT)

Product Description	Thermal resistance (RTD) measurement module, 16 bit resolution, 4 channels
Number of channels	4
Signal type	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni 200, Ni500, Ni1000, Cu10, 40 Ω, 80 Ω, 150 Ω, 300 Ω, 500 Ω, 1 kΩ, 2 kΩ, 4 kΩ
measuring range	Thermal resistance
temperature range	depending on the sensor type 0,1 mA (Pt100, Ni100, Ni120, Cu10, 40 Ω, 80 Ω, 150 Ω, 300 Ω) or 0,1 mA (Pt200, Pt500, Pt1000, Ni200, Ni500, Ni1000, 500 Ω, 1 kΩ, 2 kΩ, 4 kΩ)
accuracy	max. 0.2 % FSR / 0.3 % FSR for Ni sensors / 0.6 % FSR for Cu10
Sensor current	depending on the sensor type 0,1 mA (Pt100, Ni100, Ni120, Cu10, 40 Ω, 80 Ω, 150 Ω, 300 Ω) or 0,1 mA (Pt200, Pt500, Pt1000, Ni200, Ni500, Ni1000, 500 Ω, 1 kΩ, 2 kΩ, 4 kΩ)
line type	2/3/4 wire system
temperature coefficient	± 50 ppm/K max
Conversion time	100-800ms, configurable
Common mode input voltage range	Line to line: max ±2V Line power supply: max ±50V
Module diagnosis	support
Single channel diagnosis	support
Isolation method	Magnetic isolation between each channel and the on-site layer, and isolation between channels
data size	8 Byte
Internal resistance	>500K Ω
resolving power	16bit, 0.1°C/per digit
Frequency interference suppression	50Hz 60Hz 400Hz
diagnosis	Broken line/parameter assignment error
Process alarm	Upper/lower limit of each channel
working voltage	24VDC+20%/-15%
System feed current	<100mA
Wiring parameters	
Connection technology: input end	PUSH-IN type wiring port
line type	Input
Crimping area of wire	0.14~1.5mm ² /26~16AWG
Strip length	8~10mm
Installation method	DIN-35 type guide rail
Material parameters	
Colour	Black
Housing material	PC plastic, PA66
Consistency flag	CE
Environmental requirements	
Permissible ambient temperature (during operation)	-25~60°C
Permissible ambient temperature(storage)	-40~85°C
Protection type	IP20
Pollution leve	2. Comply with IEC 61131-2 standard

Working altitude	Without temperature influence:0~2000m
Relative humidity (non condensing)	5~95%RH
Anti vibration	4g, Complies with IEC 60068-2-6 standard
Impact resistance	15g,Complies with IEC 60068-2-27 standard
EMC - Immunity	Complies with EN 61000-6-2 standard
EMC-Radiated Interference	Complies with EN 61000-6-3 standard
Corrosion resistance	Complies with IEC 60068-2-42 and IEC 60068-2-43 standards
Permissible H2S pollutant concentration at 75% relative humidity	10ppm
Permissible SO2 pollutant concentration at 75% relative humidity	25ppm

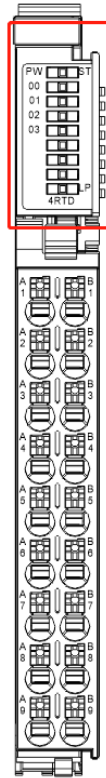
3.10.2 Hardware interface

3.10.2.1 Definition of wiring port



Serial Number	Signal	Serial Number	Signal	Explanatory note
A1	RTD0+	B1	RTD0-	Signal input channel 0
A2	Sense0+	B2	Sense0-	
A3	RTD1+	B3	RTD1-	Signal input channel 1
A4	Sense1+	B4	Sense1-	
A5	RTD2+	B5	RTD2-	Signal input channel 2
A6	Sense2+	B6	Sense2-	
A7	RTD3+	B7	RTD3-	Signal input channel 3
A8	Sense3+	B8	Sense3-	
A9	PE	B9	PE	PE

3.10.2.2 Definition of LED indicator lights

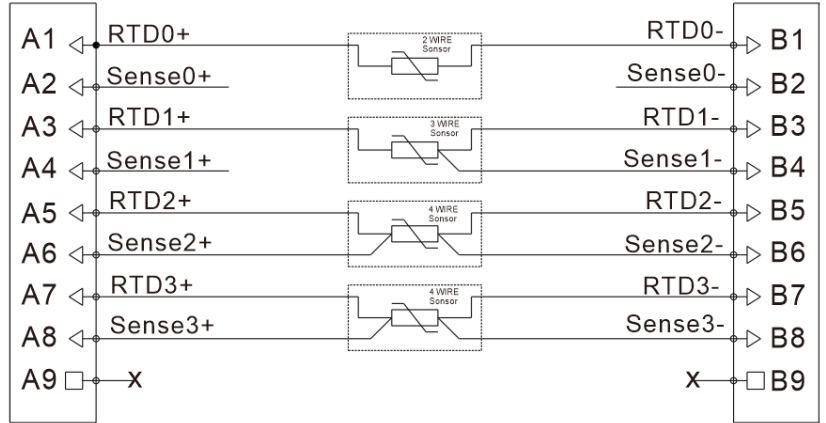
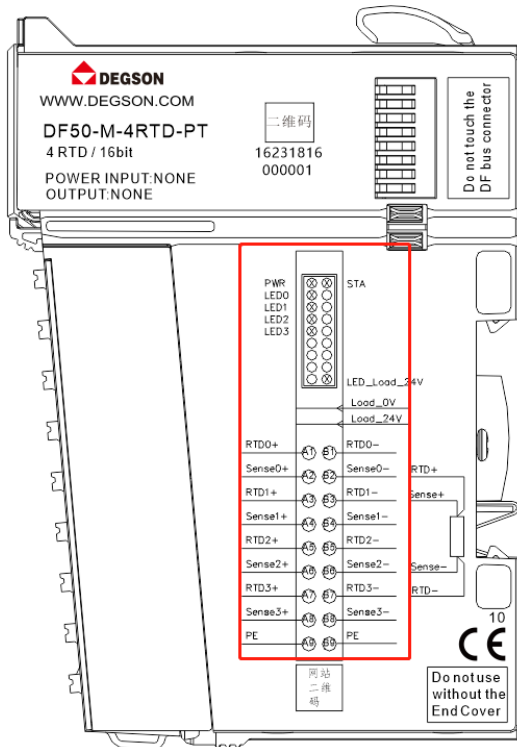


LED indicator light	Explanatory note
PW	Internal bus power supply is normal
	Abnormal internal bus power supply
ST	Power on stage: green on: module initialization abnormal, green off: module initialization normal
	Operation phase: Green flashing: The internal bus of the module is working normally, green off: The internal bus of the module is working abnormally
LP	Green on: The load power output is normal.
	Green off: Abnormal load power output.
00~03	Green flashing: Input signal acquisition is normal
	Green light: The sampling value exceeds the upper and lower limits
	Green off: The input signal exceeds the lower range or is disconnected

3.10.2.3 Wiring diagram

Remarks:

The excitation power supply+and signal+



distinguish functions and can be mixed together;

The excitation power supply and signal are usually two blue wires, or one blue and one black, without distinguishing functions and can be mixed together.

3.10.3 Process Data Definition

data in									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	数据类型
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): The analog signal input value of the corresponding channel.

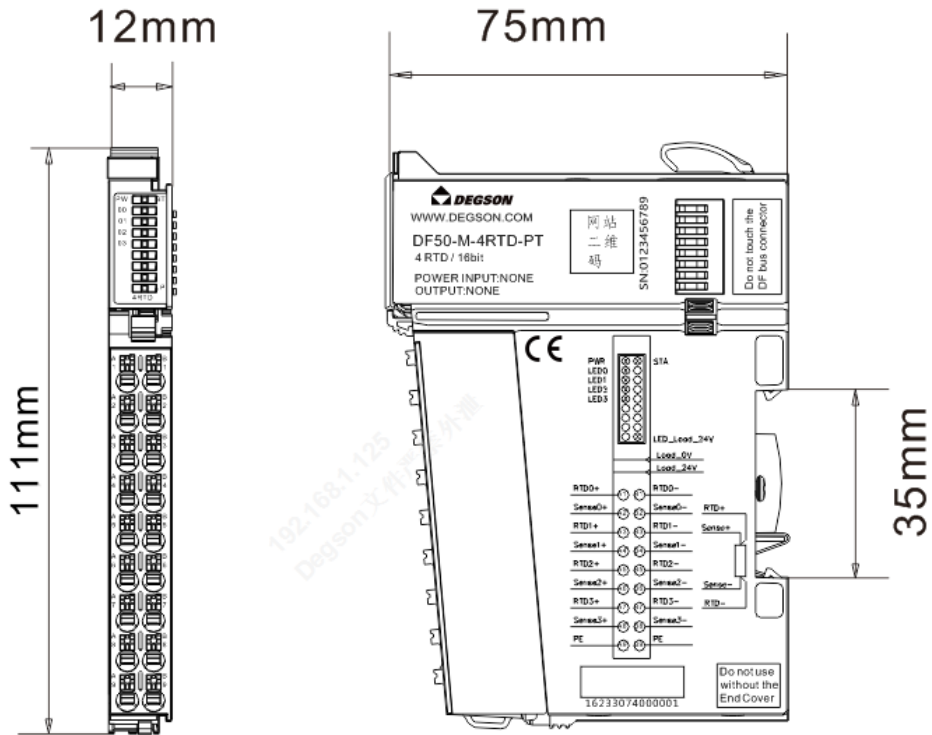
Analog Input Data (DF50-M-4RTD-PT) ——PT100/PT200/PT500		
(°C)	decimalism	
>860	32767	Exceeding the upper limit
860	8600	Overflow range
850	8500	Rated range
...	...	
...	...	
-200	-2000	
-210	-2100	Underflow range
<-210	-32767	Beyond the lower limit
Line break	-32768	Broken wire range
Analog Input Data (DF50-M-4RTD-PT) ——PT1000		
(°C)	decimalism	
>860	32767	Exceeding the upper limit
860	8600	Overflow range
850	8500	Rated range
...	...	
...	...	
-200	-2000	
-204	-2040	Underflow range
<-204	-32767	Beyond the lower limit
Line break	-32768	Broken wire range
Analog Input Data (DF50-M-4RTD-PT) ——NI100/NI200/NI500/NI1000		
(°C)	decimalism	
>254	32767	Exceeding the upper limit
254	2540	Overflow range
250	2500	Rated range
...	...	
...	...	
-60	-600	
-64	-640	Underflow range
<-64	-32767	Beyond the lower limit
Line break	-32768	Broken wire range
Analog Input Data (DF50-M-4RTD-PT) ——NI120		
(°C)	decimalism	
>313	32767	Exceeding the upper limit
313	3130	Overflow range
309	3090	Rated range

...	...	
...	...	
-79	-790	
-83	-830	Underflow range
<-83	-32767	Beyond the lower limit
Line break	-32768	Broken wire range
Analog Input Data (DF50-M-4RTD-PT) ——CU10/CU50/CU100		
(°C)	decimalism	
>163	32767	Exceeding the upper limit
163	1630	Overflow range
159	1590	Rated range
...	...	
...	...	
-59	-590	
-63	-630	Underflow range
<-63	-32767	Beyond the lower limit
Line break	-32768	Broken wire range
Analog Input Data (DF50-M-4RTD-PT) ——CU53		
(°C)	decimalism	
>154	32767	Exceeding the upper limit
154	1540	Overflow range
150	1500	Rated range
...	...	
...	...	
-50	-500	
-54	-540	Underflow range
<-54	-32767	Beyond the lower limit
Line break	-32768	Broken wire range

3.10.4 Mechanical Installation

Installation dimensions

The installation size information is shown in the following figure.



4-channel thermal resistance test
(DF50-M-4RTD-PT)