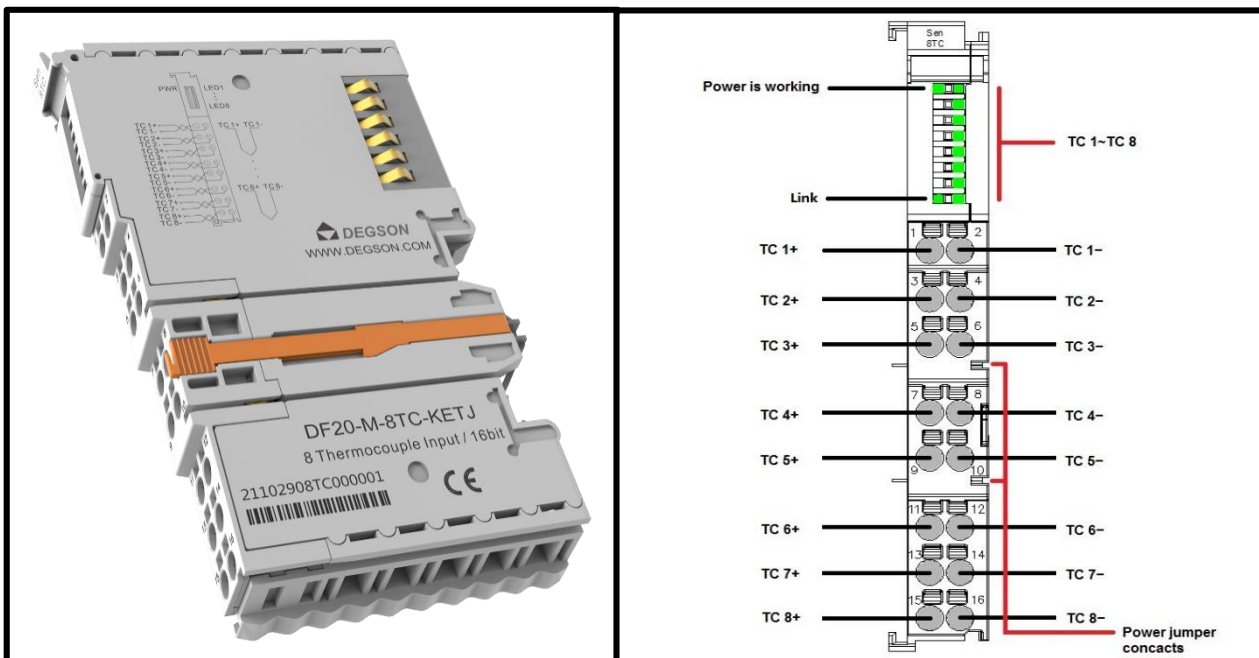


## ◆ 8 channel TC measurement (DF20-M-8TC-KETJ)

- 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.

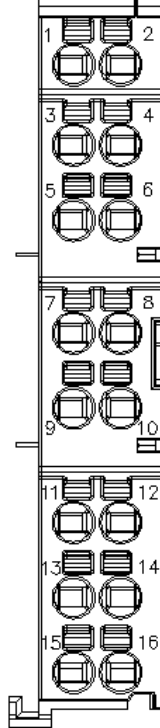


## 1. Specification

<b>Technical data</b>	
Number of channels	8
Signal type	Thermocouple
Signal type	E(-270~1000°C), J(-210~1200°C), T(-270~400°C), K(-270~1370°C), B(50~1820°C), S(-50~1760°C), R(-50~1770°C), N(0~2320°C), L(-200~900°C)
Cold End compensation	Internal and external (accuracy ≤3K)
Temperature coefficient	≤50ppm/K
Diagnosis	Yes
Connection type	2-line
Resolution [bit]	16 Bit, 0.1°C/each number
Precision	±0.3%
Data size	16 Byte
Temperature coefficient	±0.5%
Measuring range	-270°C~1370°C
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
<b>Connection data</b>	
Connection technology: inputs / outputs	16 x via pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2~1.5mm <sup>2</sup> /28~16AWG
Strip length	8~9mm/0.31~0.35inches
Mounting type	DIN-35 RAIL
<b>Material Data</b>	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
<b>Environmental requirements</b>	
Ambient temperature (operation)	-25~60°C
Surrounding air temperature (storage)	-40~85°C
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

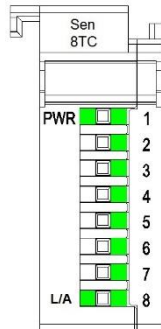
## 2. Hardware Interface

### ● Wiring Terminal



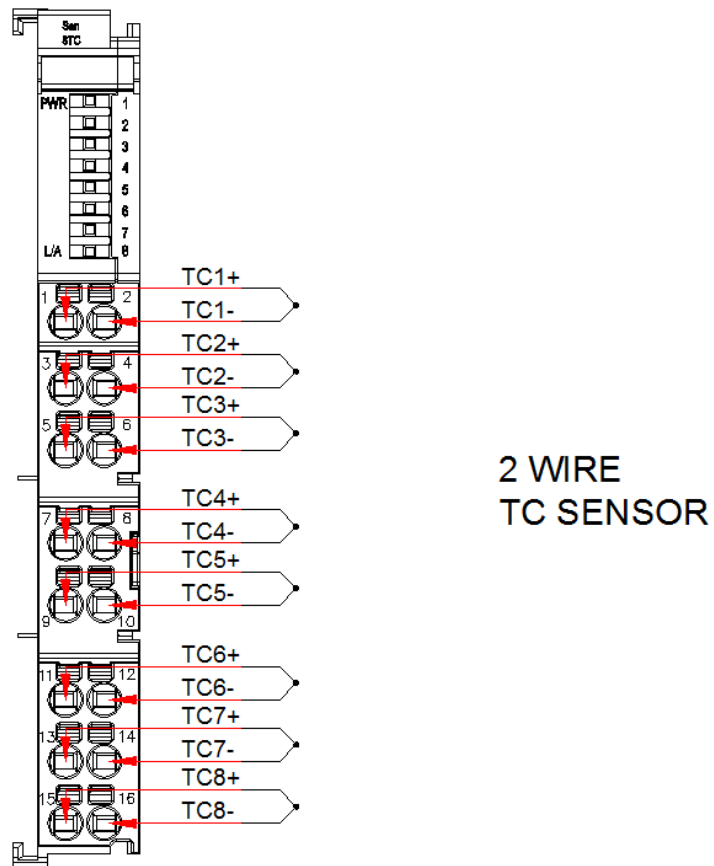
No.	Signal	Description
1	TC 1+	Signal Input CH 1
2	TC 1-	
3	TC 2+	Signal Input CH 2
4	TC 2-	
5	TC 3+	Signal Input CH 3
6	TC 3-	
7	TC 4+	Signal Input CH 4
8	TC 4-	
9	TC 5+	Signal Input CH 5
10	TC 5-	
11	TC 6+	Signal Input CH 6
12	TC 6-	
13	TC 7+	Signal Input CH 7
14	TC 7-	
15	TC 8+	Signal Input CH 8
16	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; Port 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 (°C)	Decimal	
>1010	32767	Exceeds the upper limit
1010	10100	Overflow
1000	10000	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) —J type		
Temperature (°C)	Decimal	
>1210	32767	Exceeds the upper limit
1210	12100	Overflow
1200	12000	Rated range
...	...	
...	...	
-210	-2100	
-220	-2200	Underflow
<-220	-32767	Exceeds the lower limit
Line break	-32768	Line break
Analog Input Data (DF20-M-4TC-KETJ) —T type		
Temperature (°C)	Decimal	
>410	32767	Exceeds the upper limit
410	4100	Overflow
400	4000	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) —K type		
Temperature (°C)	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
<b>Analog Input Data (DF20-M-4TC-KETJ) —B type</b>		
Temperature (°C)	Decimal	
>1830	32767	Exceeds the upper limit
1830	18300	Overflow
1820	18200	Rated range
...	...	
...	...	
50	500	
40	400	Underflow
<40	-32767	Exceeds the lower limit
Line break	-32768	Line break
<b>Analog Input Data (DF20-M-4TC-KETJ) —S type</b>		
Temperature (°C)	Decimal	
>1770	32767	Exceeds the upper limit
1770	17700	Overflow
1760	17600	Rated range
...	...	
...	...	
-50	-500	
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
<b>Analog Input Data (DF20-M-4TC-KETJ) —R type</b>		
Temperature (°C)	Decimal	
>1780	32767	Exceeds the upper limit
1780	17800	Overflow
1770	17700	Rated range
...	...	
...	...	
-50	-500	
-60	-600	Underflow
<-60	-32767	Exceeds the lower limit
Line break	-32768	Line break
<b>Analog Input Data (DF20-M-4TC-KETJ) —N type</b>		
Temperature (°C)	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
<b>Analog Input Data (DF20-M-4TC-KETJ) —L type</b>		
Temperature (°C)	Decimal	
>910	32767	Exceeds the upper limit
910	9100	Overflow
900	9000	Rated range
...	...	
...	...	
-200	-2000	
-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):

