The selection is detailed on page 7

DB08

Industrial Type Thermal Resistance Thermometer

Working principle

Thermal resistance is a kind of temperature measuring element commonly used in low and medium temperature region, which measures temperature by using the property that the resistance of the substance changes with the change of temperature.
The heated part of the thermal resistance (temperature sensing element) is evenly wound on the skeleton made of insulating material with a thin metal wire. When there is a temperature gradient in the measured medium, the measured temperature is the average temperature in the medium layer within the range of the temperature sensing element.

Product description

Thermal resistance thermometers without sheathing are particularly suitable for applications where a metal probe is inserted directly into a hole (such as a part of a machine), or directly into any application process without a chemically aggressive or abrasive medium.
If there is a sheath, it must also be equipped with a spring, because the spring can reliably press the bottom end of the probe into the bottom of the sheath. Usually installed directly in the process. Fasteners such as threaded joints or movable nuts can also be used.
The probe flexible part is a mineral insulated cable. The cable is covered with stainless steel casing. The inner conductors are compacted in an insulating, high-density ceramic material. The measuring resistance is connected to the internal conductor at the measuring end of the armored cable. Therefore, it is suitable for use at high temperatures.

Product application

Vent pipe

Air conditioning system

Temperature measurement in harsh environments

Construction process control technology

Sanitation, heating and cooling technology

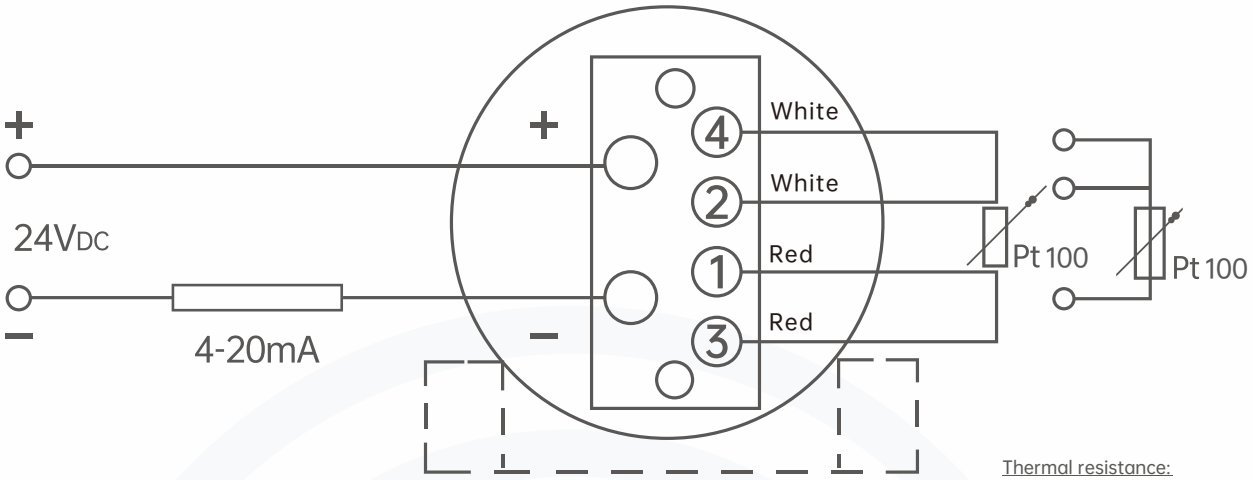
Functional characteristics

Sensor range: -196... +600℃(-320... +1,112 ℉)

Probe rod, threaded (optional process connector)

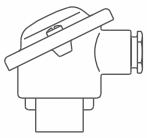
Explosion proof type

Working principle Analytic table

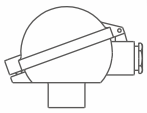


Thermal resistance:
three or four wire system

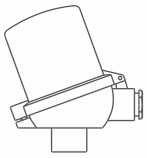
Connector



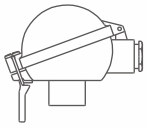
DBM



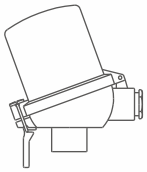
DBM-A



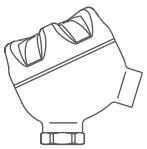
DBM-B



DBM-C



DBM-D



DBM-E

Connector material and specification

Materials	Cable inlet thread specification	Class of protection (Maximum value)	Surface	The connection to the neck tube
Aluminum	M20x1.5 or 1/2NPT[1)]	IP65[2)]	Blue finish	M24x1.5 1/2 NPT
Aluminum	M20x1.5 or 1/2NPT[1)]	IP65[2)]	Blue finish	M24x1.5 1/2 NPT
Aluminum	M20x1.5 or 1/2NPT[1)]	IP65[2)]	Blue finish	M24x1.5 1/2 NPT
Aluminum	M20x1.5 or 1/2NPT[1)]	IP65	Blue finish	M24x1.5 1/2 NPT
Aluminum	M20x1.5 or 1/2NPT[1)]	IP65	Blue finish	M24x1.5 1/2 NPT
Stainless steel	M20x1.5[1)]	IP65	Natural color, electric polishing	M24x1.5

1) Standard (other available on demand);
2) The level of protection can be provided upon request, describing temporary or prolonged immersion;

Connector explosion-proof protection type

Explosion protection							
There is no	Ex i (gas) 0, 1, 2 area	Ex i (dust) 20, 21, 22 area	Ex eb (gas)1 area	Ex tb (dust)21 area	Ex ec (gas)2 area	Ex nA (gas)2 area	Ex tc (dust)22 area
x	x	x	–	–	–	–	–
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	–	–	–	–	–	–
x	x	–	–	–	–	–	–
x	x	–	–	–	–	–	–

Cable inlet

Junction box product illustration

Standard

Plastic

Plastic (Ex)

Nickel-plated brass

Cable inlet thread specification and temperature

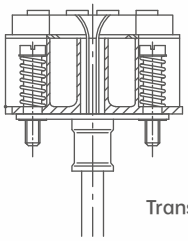
Cable inlet	Cable inlet thread specification	Minimum/maximum ambient temperature
Standard cable inlet[1)]	M20x1.5 or 1/2NPT	-40 ... +80 ℃
Plastic cable head (Cable diameter 6... 10 mm)[1)]	M20x1.5 or 1/2NPT	-40 ... +80 ℃
Plastic cable head (Cable diameter 6... 10 mm), Ex e[1)]	M20x1.5 or 1/2NPT	-20 ... +80 ℃ (Standard) -40 ... +70 ℃ (可选)
Nickel-plated brass cable joint (Cable diameter 6... 12 mm)	M20x1.5 or 1/2NPT	-602)/-40 ... +80 ℃

Type of explosion-proof protection for cable inlet

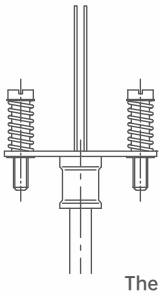
Cable inlet	Colour	Class of protection (Comply with IEC/EN 60529 standard (Maximum value))	Explosion protection							
			There is no	Ex i (gas) 0, 1, 2 area	Ex i (dust) 20, 21, 22 area	Ex eb (gas)1 area	Ex tb (dust)21 area	Ex ec (gas)2 area	Ex nA (gas)2 area	Ex tc (dust)22 area
Standard cable inlet[1)]	Natural quality	IP65[3)]	x	x	x	–	–	–	–	–
Plastic cable gran head[1)]	Black or grey	IP66[3)]	x	x	x	x	x	x	x	x
Plastic head, Ex e[1)]	Baby blue	IP66[3)]	x	x	x	x	x	x	x	x
Plastic head, Ex e[1)]	Black	IP66[3)]	x	x	–	–	–	–	–	–
Nickel plated brass gran head	Natural quality	IP66[3)]	x	x	–	–	–	–	–	–
Nickel plated brass gran head, Ex e	Natural quality	IP66[3)]	x	x	–	–	–	–	–	–

1) Not applicable to DBM-E connectors;
2) Special versions (only with special permission) and other temperatures are available on request;
3) A level of protection can be provided upon request, describing temporary or prolonged immersion;

Transmitter



Transmitter mounted
Terminal block



The terminal board of the transmitter will be installed

Mount to measuring rod

When the transmitter is installed on the measuring rod, the transmitter replaces the terminal and is directly fixed on the terminal board of the measuring rod.

Install it in the protective cap of the connection head

Compared with installing the transmitter on the measuring rod, it is recommended to install it in the protective cap of the connection head to ensure better thermal insulation and simplify the replacement and installation operations required for maintenance.

Transmitter model number

Output signal 4... 20 mA HART® protocol FOUNDATION™ Fieldbus and PROFIBUS® PA standard cable entry

Transmitter	S10 type	S20 type	S30 type
Exportation			
4 ... 20 mA	x	x	–
HART agreement	–	x	–
Connection mode			
1x2Wire, 3-wire or 4-wire system			x
Measuring current	<0.2mA	<0.3mA	<0.2mA
Explosion protection	selectable	selectable	selectable

Potential transmitter installation location

connector	S10 type	S10 type	S10 type
DBM	○	–	○
DBM-A	○	○	○
DBM-B	●	●	●
DBM-C	○	○	○
DBM-D	●	●	●
DBM-E	○	○	○

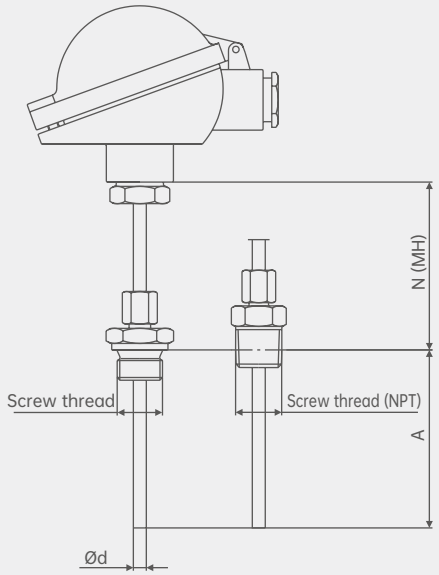
For all connectors listed here, the transmitter can be mounted on the measuring rod;

2 transmitters can be installed as required;

In order to determine the total measurement error correctly, the measurement error of sensor and transmitter must be increased.

● Install the wiring terminal instead ○ Install the connector in the protective cap – Cannot install

Process connection



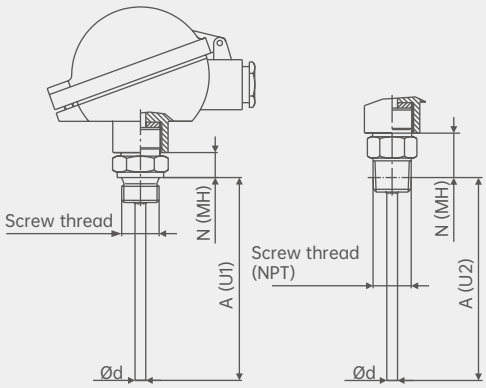
Movable sleeve

This type can be easily adjusted to the desired insertion length at the mounting position;
The A and N (MH) dimensions refer to the values under the most primitive conditions, since the press-fit joint can be moved on the probe. The length of the pressed joint determines that the minimum neck length N (MH) is about 40 mm;
Material: Stainless steel ring material: stainless steel or PTFE
Stainless steel collar can only be adjusted once; Once it is unscrewed, it can no longer slide along the sheath.
· The maximum temperature at the process connection is 500 ℃ (no pressure)
· Maximum pressure load is 2 MPa (Max 150℃, Ø6mm)
PTFE sleeve can be adjusted many times, and can still slide repeatedly on the sheath after unscrewing;
· The maximum temperature at the process connection is 150 ℃
· For non-pressure use
For resistance thermometers with a diameter of Ø2mm (with sheath), only PTFE sleeve rings can be used;

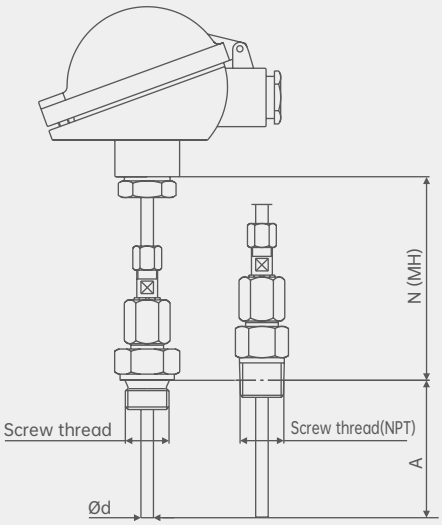
Process connection

Double thread hexagon joint

Use a double-sided threaded bushing to screw the thermometer directly into the process connection.
The specified permissible temperature requirements must be observed.
The neck length N(MH) of the cylindrical thread depends on the height of the hexagonal part.
Here it is 13mm.
The neck length N(MH) of the NPT thread includes not only the height of the hexagonal part, but also half the height of the thread. In this way, the neck length N(MH) value is about 25mm.



Process connection



Flexible sleeve

This type can be easily adjusted to the desired mounting length at the mounting point, while maintaining a certain spring preload.
The A and N (MH) dimensions refer to the original values at the time of delivery, since the press-fit joint can be moved on the probe. The length of the pressed joint determines that the minimum neck length N(MH) is about 100mm.
Material: Stainless steel
Ring material: stainless steel
Stainless steel collar can only be adjusted once; Once it is unscrewed, it can no longer slide along the sheath.
· The maximum temperature at the process connection is 150 ℃
· For non-pressure use

Process connection

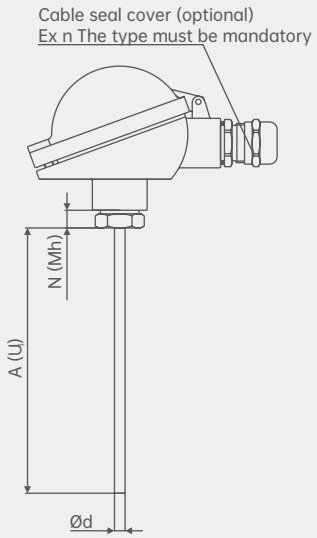
The DB08 resistance thermometer (with sheath) is optional with the following process connections. Insertion length
A (U1 or U2) can be customized as required. The neck length N (MH) depends on the type of process connection selected;
In order to minimize the heat emitted by the threaded connection, the insertion length A should be at least 25mm. The position of the threaded connection is determined by the size N (MH) and does not change with the type of process connection;

No process connection

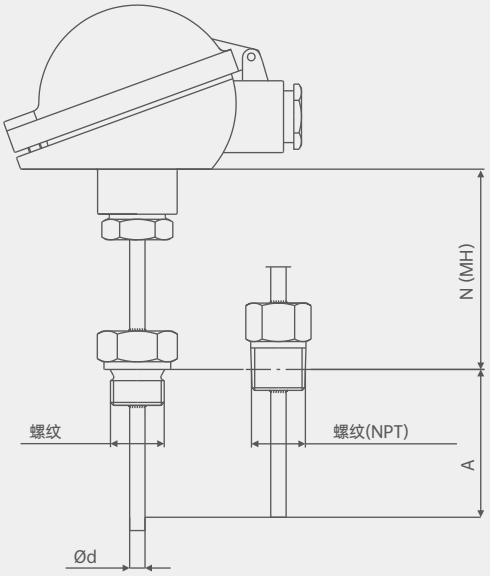
No process connection This type is mainly designed for installation using a movable sleeve and is compatible with all junction boxes from B to KN sizes;
Neck length N(MH) here refers only to the height of the hexagonal portion at the top of the sheath. N (MH) is always 10mm;

Please note:

- For cylindrical threads (G1/2), size refers to the threaded joint seal closest to the process.
- For taper threads (NPT), the measuring plane is located near the center of the thread.



Process connection



Extended fixed threaded connection

This type is mainly used to install the thermometer into the threaded joint through the internal thread;

Insert length A: based on user specifications;

Material: stainless steel (or other materials that meet customer requirements);

The probe must be turned to screw it into the process connection. Therefore, this design must first complete the mechanical installation, and then the electrical connection;

DB08-Selection composition

Selection example Threaded type DB08

B	S	G	J	S	V	S	B	E	O	U	A	S	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14

1.Selection description	A	All-in-one transmitter
	B	Threaded casing
	C	Intrinsically safe explosion-proof type
	D	Flameproof type
	T( )	Other types
2.Threaded connection	S	Sliding thread
	F	Fixed thread
3.Insert probe design	G	Fixed installation
	H	Spring fixed terminal block (replaceable insert)
4.Junction box	I	Aluminum
	J	Stainless steel
	K	With digital temperature display
	T( )	Other types of junction boxes
5.Electrical interface	R	1/2NPT
	F	M20×1.5
	T( )	Other electrical connections
6.Wiring block/sensor	U	Crastin Terminal block
	V	Ceramic connection block
	W	S10 (4-20mA transmitter)
	X	S20 (HART transmitter)
	Y	S30 (Fieldbus transmitter)
7.Wire system	S	Single 3-wire system
	Z	Double branch 6-wire system
	T( )	Other wire system
8.Dimension of thread connection	A	1/2NPT
	B	G1/2
	C	M20×1.5
	T( )	Other connection sizes
9.Thermal resistance element	E	Pt100, B level
	F	Pt100, A level
	G	Pt1000, B level
	H	Pt1000, A level
10.Probe rod material	M	304SS
	L	316/316L (1.4401/1.4435)
	T( )	Other materials

DB08-Selection composition

Selection example Threaded type **DB08**

B	S	G	J	S	V	S	B	E	O	U	A	S	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14

11.Temperature range (℃)	N	-50...+250			
	O	-50...+450			
	P	-200...+250			
	Q	-200...+450			
	R	-200...+600			
	U	0...+400			
	S	0...+500			
	T( )	Other measured temperatures			
12.Rod length (mm)	A	50			
	B	100			
	C	150			
	D	200			
	E	250			
	F	300			
	G	350			
	H	400			
	I	450			
	J	500			
	T( )	Other lengths			
13.Rod diameter (mm)	P	3mm			
	Q	4mm			
	R	5mm			
	S	6mm			
	V	8mm			
	U	10mm			
14.Safety certification	E	Intrinsic safety			
	D	Explosion proof			
	N	There is no			
15.Additional order information	X	Additional information			
	Z	There is no			

Instructions:

The DB08 thermistor is a thermometer with a threaded sleeve, with a sliding thread connection method. The probe rod is designed for fixed installation, and the junction box material is stainless steel. The electrical interface is M20 * 1.5, and the sensor is a ceramic junction block with a single three wire system. The thread specification is G1/2, and the thermistor element is Pt100, Class B, with a temperature range of 0... 400 ℃. The probe rod length is 50mm, the probe rod diameter is 6mm, and the probe rod material is 304SS. It is not explosion-proof, The 15 items are non mandatory options.

DB08-Selection composition

Selection example
Flange connection type **DB08**

B	S	G	L	V	B	G	N	V	D	G	X	F	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14

1.Selection description	A	All-in-one transmitter
	B	Flange casing
	C	Intrinsically safe explosion-proof type
	D	Flameproof type
	T( )	Other types
2.Flange connection	S	20592 Standard flange
	F	ANSI Standard flange
	T( )	Other standards
3.Insert probe design	G	Fixed installation
	H	Spring fixed terminal block (replaceable insert)
4.Junction box	K	Aluminum
	L	Stainless steel
	M	With digital temperature display
	T( )	Other types of junction boxes
5.Electrical interface	U	1/2NPT
	V	M20×1.5
	T( )	Other electrical interfaces
6.Wiring block/sensor	A	Crastin Terminal block
	B	Ceramic connection block
	C	S10 (4-20mA transmitter)
	D	S20 (HART transmitter)
	E	S30 (Fieldbus transmitter)
7.Wire system	G	Single 3-wire system
	H	Double branch 6-wire system
	T( )	Other wire system
8.Flange connection size	N	DN25
	O	DN50
	P	DN80
	Q	DN100
	R	ANSI 1"
	S	ANSI 2"
	T	ANSI 3"
	U	ANSI 4"
	T( )	Other flange types
9.Thermal resistance element	V	Pt100, B level
	W	Pt100, A level
	X	Pt1000, B level
	Y	Pt1000, A level

DB08-Selection composition

Selection example Flange connection type **DB08**

B	S	G	L	V	B	G	N	V	D	G	X	F	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14

10.Rod diameter	A	3mm
	B	4mm
	C	5mm
	D	6mm
	E	8mm
	F	10mm
	T( )	Other specifications

11.Rod length (mm)	G	50
	O	100
	P	150
	Q	200
	R	250
	S	300
	H	350
	U	400
	V	450
	W	500
	T( )	Other lengths

12.Probe rod material	X	304SS
	Y	316/316L (1.4401/1.4435)
	T( )	Other materials

13.Temperature range (℃)	A	-50...+250
	B	-50...+450
	C	-200...+250
	D	-200...+450
	E	-200...+600
	F	0...+400
	G	0...+500
	T( )	Other measured temperatures

14.Safety certification	X	Intrinsic safety
	Y	flameproof
	Z	There is no

15.Additional order information	V	Additional information
	N	There is no

Instructions:

The DB08 thermistor is a thermometer with a flange sleeve, connected using the 20592 standard flange. The probe rod is designed for fixed installation, and the junction box material is stainless steel. The electrical interface is M20 * 1.5, and the sensor is a ceramic junction block, single branch three wire system. The flange specification is DN25, and the thermistor element is Pt100, Class B. The probe rod diameter is 6mm, the probe rod length is 50mm, the probe rod material is 304SS, and the temperature range is 0... 400 ℃. There is no explosion-proof, and 15 items are not mandatory options.

Product certification

Compliance and approval; Ludwig thermometers meet key standards and certifications for process measurement technology; Thus guaranteeing the highest reliability in such Settings;

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