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J2S

Industrial Type Bimetal Thermometer

Working principle

Bimetal thermometers are based on the principle of solid expansion under heat, and the temperature is usually measured by welding two metal sheets with relatively large difference in expansion coefficient together to form a bimetal temperature sensing element.

When the temperature changes, due to the relatively large difference in the linear expansion coefficient of the two different materials of the bimetal sheet, different expansion and contraction occur, resulting in bending deformation of the bimetal sheet.

According to the different amount of deformation and produce different momentum, the amount of rotation drives the connected shaft, the shaft drives the other end of the indicator needle, so that the indicator pointer can be pointed to the correct reading, indicating the temperature.

Product description

J2S bimetal thermometer is the entry-level product of process thermometer. Mainly used in air conditioning and machinery manufacturing industry.

Model J2S bimetallic thermometers are manufactured in accordance with EN 13190 with stainless steel housing, accuracy class 1 and nominal size greater than 60mm.

The J2S bimetal thermometer probe and its many choices of nominal size make it widely used in different fields.

Product application

Widely used in mechanical manufacturing and tank body

Pipe and instrument manufacturing

Heating system

Functional characteristics

Range: -30 °C... +500 °C

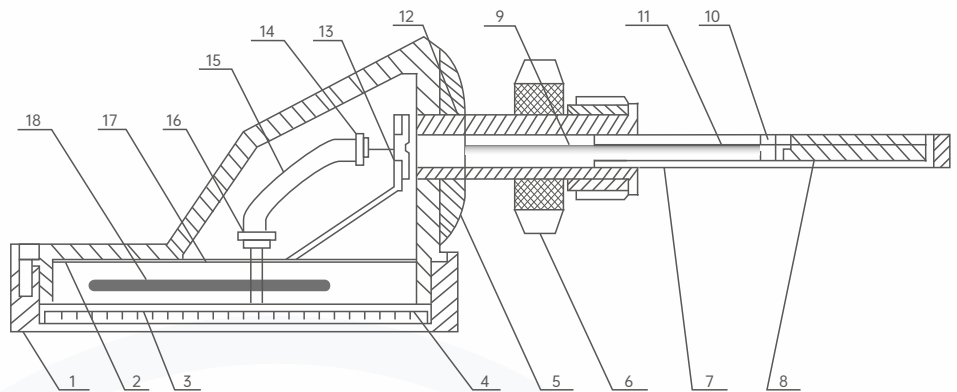
Table circle diameter optional: 100mm/160 mm

The casing and probe rod are made of stainless steel

Multiple interface design

Bimetallic thermometer Structure chart

1. Watch cover
2. shell
3. glass
4. Sealing ring
5. nut
6. Male joint
7. Outer protective tube
8. Bimetallic temperature sensing element
9. Driving shaft
10. Lower connection of inner protection pipe
11. Inner protective tube
12. External protection pipe fitting
13. support
14. Angle spring lower fastener
15. Angle spring
16. Angle spring upper fastener
17. Panel
18. pointer



Technical parameter

Measuring element	Bimetallic ring
Nominal size (mm)	100 and 160
Joint design	5 standard (External thread connection)
	1 Smooth rod (without thread)
	2 External thread nuts
	3 Coupling nut
	4 Movable sleeve (can slide on the probe)
	5 Other joint designs are available upon request
Unit (scale range)	°C [Optional: °F, °C/°F (dual scale)]
Accuracy class	Class 1, in accordance with EN 13190
Scope of work	Continuous load: measuring range, according to EN 13190
	Short time (up to 24 hours) : scale range, according to EN 13190
Material	
■ Case, ring, probe	Stainless steel
■ Process connections and gaskets	Stainless steel
A bend in the back of the housing	Aluminum, radial mounting type only
Dial plate	Aluminum, white, black print
Pointer	Aluminum, black, adjustable pointer
Watch window	Instrument glass
Allowable working pressure of the probe rod	Max. 2.5 MPa (static pressure)
Class of protection	IP43, in accordance with IEC/EN 60529

Scale range, measuring range ¹⁾, Error Limit (EN 13190)

1) The limit value of the measuring range is indicated by two triangular marks on the dial. Only within this range can the error limits specified in EN 13190 be guaranteed.

Scale according to LUDWIG standard

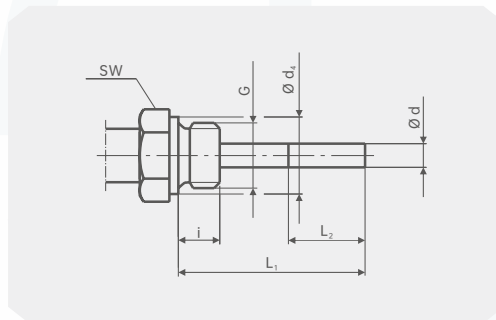
Range (unit: °C)	Measuring range (unit: °C)	Minimum scale value (unit: °C)	Error limit (± °C)
-30 ... +50	-20 ... +40	1	1
-20 ... +60	-10 ... +50	1	1
-20 ... +80	-10 ... +70	1	1
0 ... 60	10 ... 50	1	1
0 ... 80	10 ... 70	1	1
0 ... 100	10 ... 90	1	1
0 ... 120	10 ... 110	2	2
0 ... 160	20 ... 140	2	2
0 ... 200	20 ... 180	2	2
0 ... 250	30 ... 220	5	2.5
0 ... 300	30 ... 270	5	5
0 ... 400	50 ... 350	5	5
0 ... 500	50 ... 450	5	5

Joint design

Standard design (external thread connection)

Standard insertion length L1= 63, 100, 160, 200 and 250 mm

- Icon symbol:
 G Male thread
 I Thread length
 Ød4 Seal ring diameter
 SW Wrench width
 Ød Rod diameter
 L2 Effective length

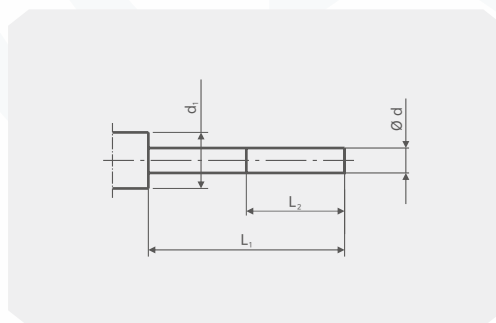


Nominal size	Process connection		Size(mm)		
	G	i	SW	Ød ₄	Ød
100,160	G1/2B	12	19	18	6 or 8
	G3/4B	14	27	26	6 or 8
	M18×1.5	12	24	23	6 or 8
	3/4NPT	19	22	-	6 or 8

Design 1, smooth rod (no thread)

Standard insertion length L1= 45, 63, 100, 140, 160, 200, 240 and 290 mm

- Icon symbol:
 Ød1 aperture
 Ød Rod diameter
 L2 Effective length

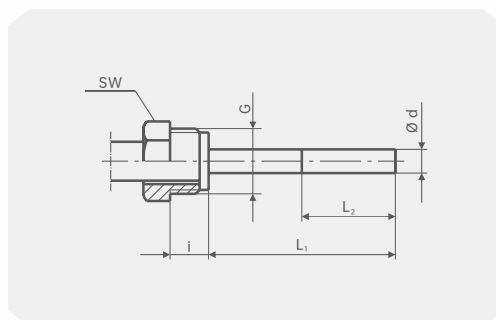


Nominal size	Size(mm)	
NS	Ød ₁	Ød
100,160	18	6 or 8

Design 2, nuts with external threads

Standard insertion length L1=80, 140, 180 and 230mm

- Icon symbol:
 G Male thread
 I Thread length
 SW Wrench width
 Ød Rod diameter
 L2 Effective length



Nominal size	Process connection		Size(mm)	
	G	i	SW	Ød
100,160	G1/2B	20	27	6 or 8
	M18×1.5	17	22	6 or 8



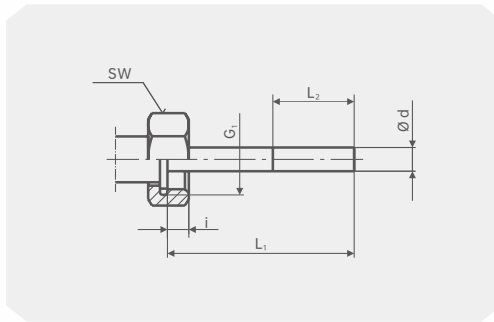
Joint design

Design 3, coupling nut

Standard insertion length
L1=89, 126, 186, 226
and 276 mm

Icon symbol:

- G Male thread
- I Thread length
- SW Wrench width
- Ød Rod diameter
- L2 Effective length



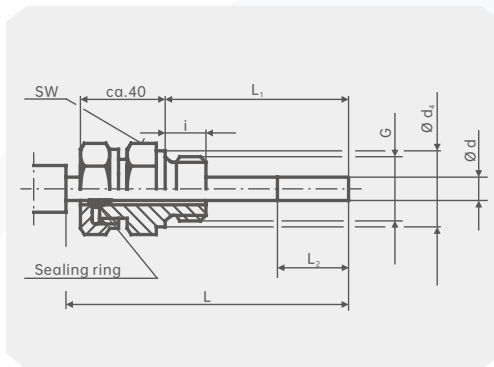
Nominal size	Process connection		Size(mm)	
	G	i	SW	Ød
NS 100,160	G1/2	8.5	27	6或8
	G3/4	9.5	32	6或8

Design 4, active card sleeve (Slide on the probe)

Standard insertion length
L1=89, 126, 186, 226
and 276 mm

Icon symbol:

- G Male thread
- I Thread length
- Ød4 Seal ring diameter
- SW Wrench width
- Ød Rod diameter
- L2 Effective length



Nominal size	Process connection		Size(mm)		
	G	i	SW	Ød ₄	Ød
NS 100,160	G1/4B	8	22	18	6 or 8
	G1/2B	14	27	26	6 or 8
	M18×1.5	12	24	23	6 or 8
	1/2NPT	19	22	-	6 or 8
	G3/4B	16	32	32	6 or 8
	3/4NPT	20	30	-	6 or 8

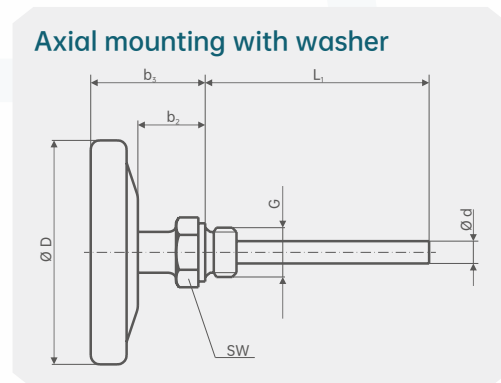
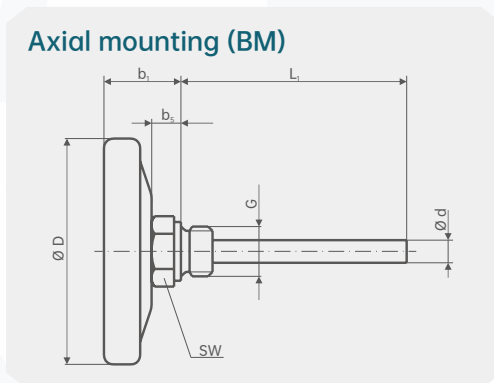
Size mm

Axial mounting (BM)

(Max 250°C)

Axial mounting with washer

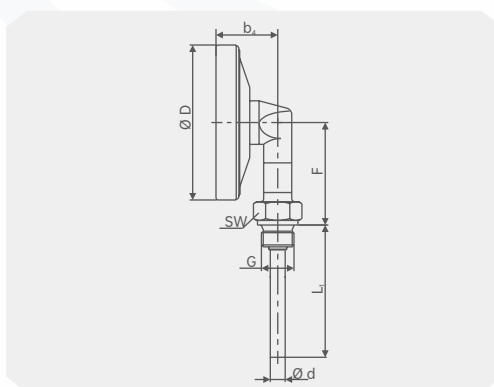
(Models ≥300 °C can be provided according to customer requirements)



Radial mounting (LM)

1) Models ≥300°C can be provided according to customer requirements

- R Axial mounting (BM)
- RD axial installation, with spacing
- U Radial Mounting (LM)



NS	Size (mm)					ØD ₁	F	R	RD	U
	b1	b2	b3	b4	b5					
100	35	30 ¹⁾	52	40	13	100	66	0.250	0.290	0.330
160	39	30 ¹⁾	57	42.5	13	160	96	0.450	0.490	0.560

J2S-Selection composition

Selection example **J2S**



1.Installation form	A	Cardan type
	B	Radial type
	C	Axial type
	T()	Other installation forms
2.Material	S	304SS
	L	316L
	T()	Other materials
3.Dial diameter	G	100mm
	H	160mm
4.Precision	J	1.6%
	K	1.0%
5.Process connection	N	Fixed thread
	O	Sliding thread
6.Specification of threaded connection	U	G1/2 Male thread
	V	G1/4 Male thread
	W	1/2NPT Male thread
	X	1/4NPT Male thread
	Y	M14*1.5 Male thread
	Z	M20*1.5 Male thread
	S	M27*2 Male thread
	T()	Other specifications
6.1.Flange specification	H	DN10
	I	DN15
	J	DN25
	K	DN50
	L	DN80
	M	DN100
	T()	Other flange specifications
7.Rod diameter(mm)	A	6
	B	8
	C	10
	D	12
	T()	Other probe diameters
8.Rod length(mm)	G	100
	H	150
	I	200
	J	250
	K	300
	L	350

J2S-Selection composition

Selection example J2S

1	B	2	S	3	G	4	J	5	N	6	U	7	A	8	I	9	C
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8.Rod length(mm)	M	400
	N	450
	O	500
	T()	Other lengths
9.Measuring range(°C)	R	-50~50
	S	-30~50
	T	-20~60
	U	0~50
	V	0~80
	W	0~100
	X	0~150
	Y	0~200
	Z	0~250
	A	0~300
	B	0~350
	C	0~400
	D	0~450
	E	0~500
T()	Other temperature ranges	
10.Special requirements	T()	Remark

Instructions:

It means that the installation method of J2S bimetal thermometer is radial, the material is 304 stainless steel, the dial diameter is 100mm, the accuracy is 1.6%, the fixed thread connection, the thread specification is G1/2 external thread (6,6.1 is one of the two options), the diameter of the probe rod is 6mm, the length of the probe rod is 200mm, the measuring range is 0~400°C, and the measurement range is 0~400°C. The grey part of item 10 is not required.

Product certification

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