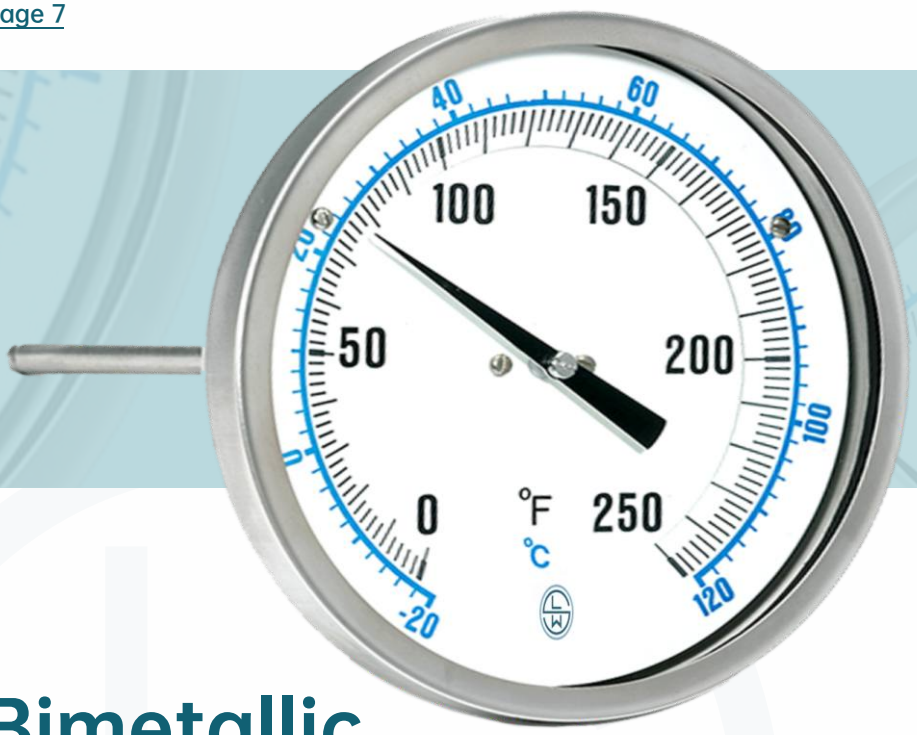
The selection is detailed on page 7



J5A

Axial Type Bimetallic 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

Bimetallic thermometers of model J5A have been developed and manufactured in accordance with EN13190. The high quality thermometers are specially designed for the application requirements of the process industry. Especially suitable for chemical and petrochemical, oil and gas and power industries, all stainless steel temperature measuring instruments have been successfully applied.
The J5A bimetallic thermometer has a high resistance to corrosive media. Optionally, 316Ti (1.4571) can be used for the probe and process connection to meet the highest requirements.
Different insertion depths and process connections can be selected according to the actual process application requirements. The J5A bimetal thermometer meets the measurement requirements in demanding application environments. Easy-to-operate reset screws on the back of the housing allow quick adjustment of the reference temperature within a limited range, reducing maintenance and recalculation costs. The J5A is also available in a variety of rod lengths (insertion length L1) to optimize its application-specific configuration and performance.

Product application

Chemical and petrochemical industries
The oil and gas industry
Power generation and water/wastewater treatment industries
Temperature measurement in harsh and harsh environments
Suitable for high vibration conditions

Functional characteristics

Rugged, case sealed
Accuracy: ± 1% full scale
Reference temperature reset outside the case to ASME B40200 standard (Class A) Disc dial (anti-parallax) for easy reading
Adjustable probe and dial for optimal process connection
Dial diameter: 100mm, 160mm

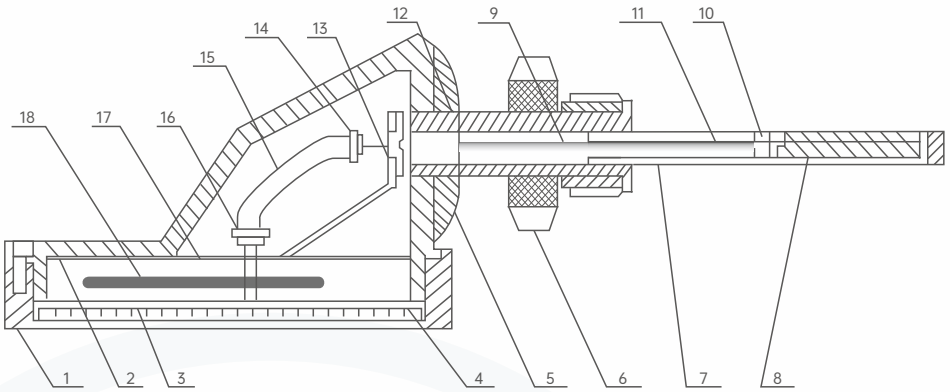
✆ 400-860-9760

For more product information, please visit www.ludwig-schneider.com.cn

LUDWIG
INSTRUMENT

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	bimetal
Nominal size (mm)	100 and 160
Joint design	S 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 Attach the nut and loosen the threaded joint
Accuracy class	Level 1, in accordance with EN13190
Shell, bayonet ring	1.4301 (304) stainless steel
Scope of work	Standard value (1 year): Measuring range (EN 13190 standard)
	Short time (up to 24 hours): scale range (EN 13190 standard)
Dial plate	Aluminum, white, black print
Watch window	Meter glass: polycarbonate window
Pointer	Aluminum, black, adjustable needle
Zero adjustment	On the back of the housing, external zeroing device, adjustable probe and dial type only (optional)
Probe rod, process connection	1.4571 (316Ti) stainless steel
Insertion length L1	63... 1000 mm
	The minimum/maximum length depends on the measuring range and diameter
Storage and transport temperature limits	- Fifty... +70 ℃
Allowable ambient temperature	- Fifty... +70 ℃ (with/without filling solution)
Allowable working pressure of the probe rod	Max. 2.5 MPa (static pressure)
Class of protection	IP65, according to IEC/EN 60529 standard

Options

Scale unit	° F and ° C / ° F (dual scale)
Damping liquid temperature	Max. 250 ° C (on the sensor)
Watch window material	Laminated safety glass, transparent anti-cracking plastic
Rod diameter	6, 10 and 12mm
Allowable ambient temperature	- Fifty... + 70 ℃
	- Seventy... + 60 ℃
Case protection class	IP66
	IP67
Other options	Thermometer with switch contact
	Special measuring ranges or dial contents are available according to customer specifications (on request)
	Models that comply with ATEX standards

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

Scale range ℃	Range[1)] ℃	Scale spacing ℃
-70 ... +70	-50 ... +50	2
-70 ... +30	-60 ... +20	1
-50 ... +50	-40 ... +40	1
-50 ... +100	-30 ... +80	2
-50 ... +300	0 ... 250	5
-50 ... +500	0 ... 450	5
-40 ... +60	-30 ... +50	1
-40 ... +80	-20 ... +60	2
-40 ... +160	-20 ... +140	2
-30 ... +50	-20 ... +40	1
-30 ... +70	-20 ... +60	1
-20 ... +60	-10 ... +50	1
-20 ... +80	-10 ... +70	1
-20 ... +100	0 ... 80	2
-20 ... +120	0 ... 100	2
-20 ... +140	0 ... 120	2
-10 ... +50	0 ... 40	1
0 ... 60	10 ... 50	1
0 ... 80	10 ... 70	1
0 ... 100	10 ... 90	1
0 ... 120	10 ... 110	2
0 ... 150	20 ... 130	2
0 ... 160	20 ... 140	2
0 ... 200	20 ... 180	2

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

1)The limits of the measuring range are 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

Scale range ℃	Range[1)] ℃	Scale spacing ℃
0 ... 250	30 ... 220	2
0 ... 300	30 ... 270	5
0 ... 400	50 ... 350	5
0 ... 500	50 ... 450	5
0 ... 600	100 ... 500	5

Scale range ℉	Range[1)] ℉	Scale spacing ℉
-80 ... +120	-40 ... +100	2
-80 ... +240	-50 ... +210	2
-20 ... +120	0 ... 100	2
0 ... 200	20 ... 180	2
0 ... 250	30 ... 220	2
30 ... 300	60 ... 270	5
30 ... 400	80 ... 350	5
50 ... 300	80 ... 270	5
50 ... 400	100 ... 350	5
100 ... 800	200 ... 700	5
200 ... 700	250 ... 650	5
200 ... 1.000	300 ... 900	5

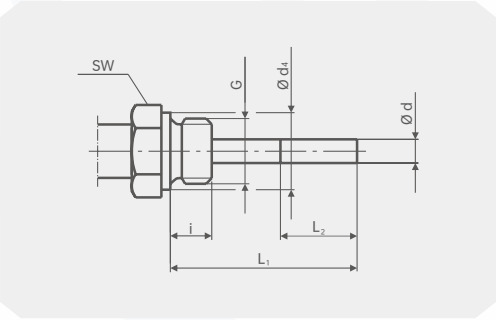
Joint design

Standard design (external thread connection)

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

Icon symbol:

G	Male thread
I	Thread length
Ø d4	Seal ring diameter
SW	Wrench width
Ø d	Rod diameter
L2	Effective length



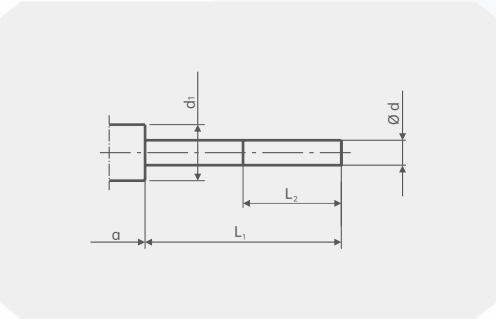
Nominal size	Process connection		Dimension (mm)		
NS	G	i	SW	Ød4	Ød
100,160	G1/2B	14	27	26	8
	G3/4B	16	32	32	8
	1/2NPT	19	22	-	8
	3/4NPT	20	30	-	8

Design 1, smooth rod (no thread)

Standard insertion length L1=140、200、240and 290 mm

Icon symbol:

a	Distance between housing and live joint
Ø d1	aperture
Ø d	Rod diameter
L2	Effective length



Nominal size	Dimension (mm)			
NS	d_1	Ød1	Axial mounting type	Adjustable probe and dial type
100,160	18	8	15	25

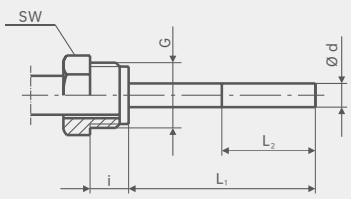
Joint design

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
Ø d	Rod diameter
L2	Effective length



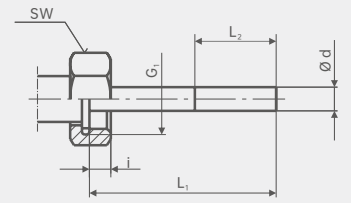
Nominal size	Process connection		Size (mm)	
NS	G	i	SW	Ød
100,160	G1/2B	20	27	8

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
Ø d	Rod diameter
L2	Effective length



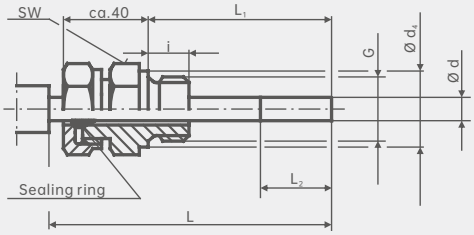
Nominal size	Process connection		Size (mm)	
NS	G	i	SW	Ød
100,160	G1/2	8.5	27	8
	G3/4	10.5	32	8
	M24*1.5	13.5	32	8

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

Standard insertion length
L1=89、126、186、226and 276 mm
Length L=L1+40mm

Icon symbol:

G	Male thread
I	Thread length
Ø d4	Seal ring diameter
SW	Wrench width
Ø d	Rod diameter
L2	Effective length



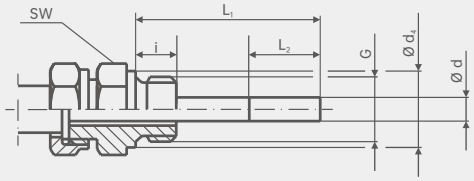
Nominal size	Process connection		Size (mm)		
NS	G	i	SW	Ød$_4$	Ød
100,160	G1/2B	14	27	26	8
	G3/4B	16	32	32	8
	M18×1.5	12	24	23	8
	1/2NPT	19	22	-	8
	3/4NPT	20	30	-	8

Design 5, loose nut and loosen Threaded joint

The minimum insertion length L_{min} is 60mm
Insert length L1 = adjustable
LengthL=L1 + 40 mm

Icon symbol:

G	Male thread
I	Thread length
Ø d4	Seal ring diameter
SW	Wrench width
Ø d	Rod diameter
L2	Effective length



Nominal size	Process connection		Size (mm)		
NS	G	i	SW	Ød$_4$	Ød
100,160	G1/2B	14	27	26	8
	G3/4B	16	32	32	8
	M18×1.5	12	24	23	8
	1/2NPT	19	22	-	8
	3/4NPT	20	30	-	8

Size (mm)

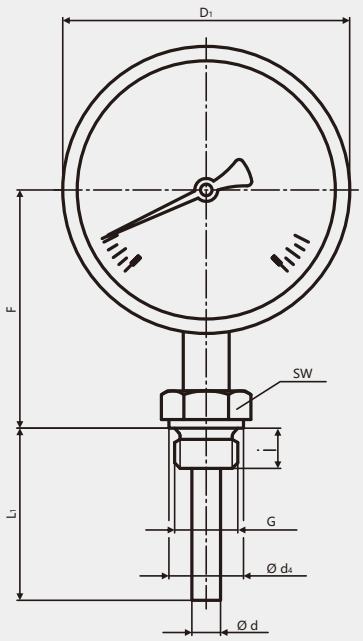
Axial mounting (BM)

The dimensions are shown in Table 1

Adjustable probe rod and variable disk type

The dimensions are shown in Table 2

Axial mounting (BM)



Adjustable probe and dial type

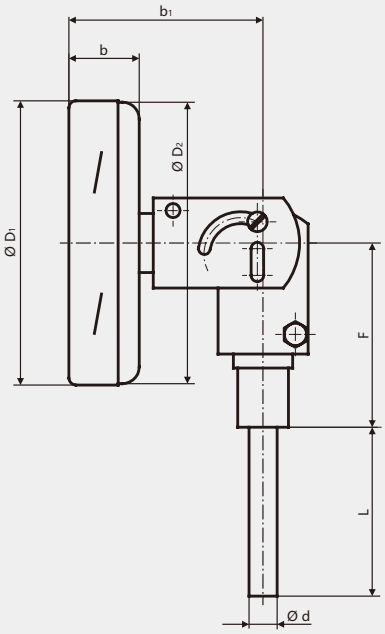


Table 1

NS	Size (mm)									weight kg
	b	b1	d[2)]	d4	$ØD_1$	$ØD_2$	F[1)]	G	SW	
100	50	83	8	26	101	99	83	G1/2B	27	0.8
160	50	83	8	26	161	159	113	G1/2B	27	1.1

Table 2

NS	Size (mm)						weight kg
	b	b1	d[2)]	$ØD_1$	$ØD_2$	F	
100	25	68	8	101	101	68	0.5
160	25	68	8	161	161	68	0.7

J5A-Selection composition

Selection example **J5A**

A	S	G	J	L	N	U	A	U
1	2	3	4	5	6	7	8	9

1.Installation form	A	Cardan type							
	B	Radial 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	L	Fixed thread							
	M	Sliding thread							
6.Specification of threaded connection	N	G1/2 Male thread							
	O	G1/4 Male thread							
	P	1/2NPT Male thread							
	Q	1/4NPT Male thread							
	R	M14*1.5 Male thread							
	S	M20*1.5 Male thread							
	V	M27*2 Male thread							
	T( )	Other specifications							
7.Rod diameter(mm)	U	6							
	V	8							
	W	10							
	X	12							
	T( )	Other probe diameters							
8.Rod length(mm)	A	100							
	B	150							
	C	200							
	D	250							
	E	300							
	F	350							
	G	400							
	H	450							
	I	500							
	T( )	other							
9.Measuring range(℃)	J	-50~50							
	K	-30~50							
	L	-20~60							
	M	0~50							
	N	0~80							
	O	0~100							

J5A-Selection composition

Selection example J5A

A	S	G	J	L	N	U	A	U
1	2	3	4	5	6	7	8	9

8.Rod length(MM)	G	400	
	H	450	
	I	500	
	T( )	Other lengths	
9.Measuring range(℃)	J	-50~50	
	K	-30~50	
	L	-20~60	
	M	0~50	
	N	0~80	
	O	0~100	
	P	0~150	
	Q	0~200	
	R	0~250	
	S	0~300	
	X	0~350	
	U	0~400	
	V	0~450	
	W	0~500	
	T( )	Other temperature ranges	
10.Special requirements	T( )	Remark	

Instructions:

It means that the installation method of J5A bimetal thermometer is universal, 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 100mm, and the measuring range is 0~400℃. 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;
This guarantees the highest reliability in such Settings;

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