WSS bimetal thermometers

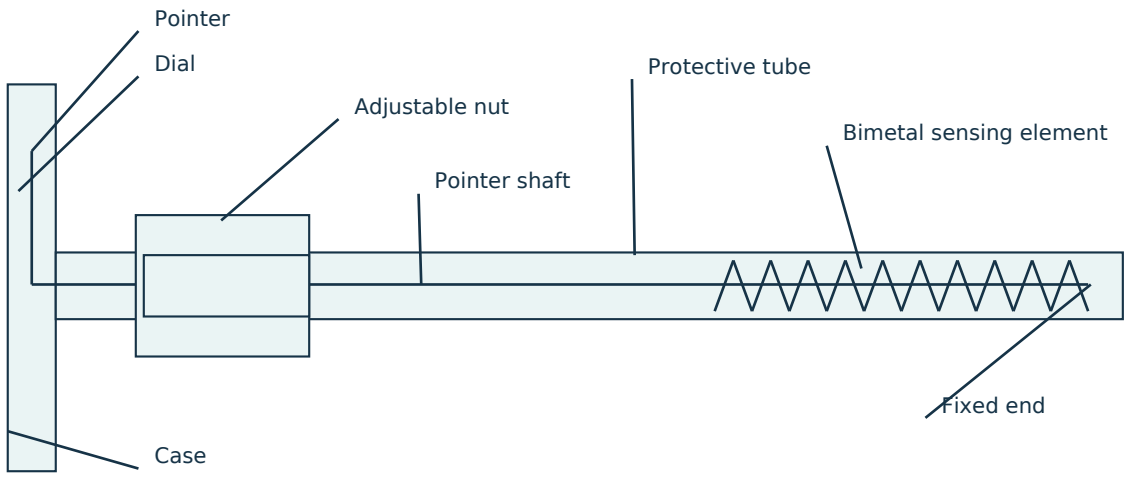
Complete English catalogue | Mechanical, remote-signal and electrical-contact versions

1. Product introduction

A bimetal thermometer is a local temperature-measuring instrument for low- and medium-temperature service. Two bonded metals with different coefficients of expansion form an active and a passive layer. Thermal bending drives the pointer to indicate temperature. Selected ranges cover liquid, steam and gas measurements within −40°C to 600°C. The protective tube is 304 stainless steel for pressure resistance and corrosion resistance. Axial, radial, 135° and universal-angle constructions accommodate different installation arrangements.

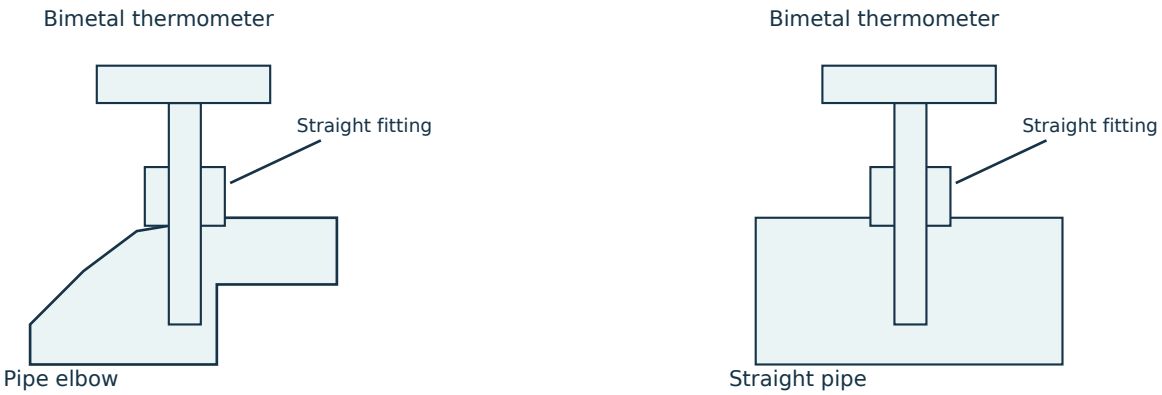
The catalogue highlights clear graduations, accurate measurement, convenient local readings and a choice of models. Standard mechanical indication needs no external power. Choose a calibrated span within the family envelope rather than treating −40°C to 600°C as every instrument’s dial range.

2. Construction, translated cutaway



Schematic redrawn from the catalogue cutaway. The sensing element is anchored at the protective-tube tip and rotates the pointer shaft as temperature changes.

3. Pipe installation arrangements



The original shows a straight fitting at a pipe elbow and at a straight pipe, with the protective tube extending into the medium. The sketches illustrate positioning and are not dimensional fabrication drawings.

Standard mechanical models

4. Model comparison

Model	Orientation	Dial	Probe Ø	Thread	Class
WSS-301	Axial	60mm	6mm	M16×1.5	2.5
WSS-311	Radial	60mm	6mm	M16×1.5	2.5
WSS-381	Universal	60mm	6mm	M16×1.5	2.5
WSS-401	Axial	100mm	10mm	M27×2	1.5
WSS-411	Radial	100mm	10mm	M27×2	1.5
WSS-481	Universal	100mm	10mm	M27×2	1.5
WSS-501	Axial	150mm	10mm	M27×2	1.5
WSS-511	Radial	150mm	10mm	M27×2	1.5
WSS-581	Universal	150mm	10mm	M27×2	1.5

5. Shared specifications for the nine models above

Parameter	Catalogue specification
Selectable measuring envelope	−40°C to 600°C; choose the required span
Reference stem length	100mm; custom lengths available
Protection	IP55
Case	Nickel-plated iron
Protective tube	304 stainless steel
Pressure resistance	≤6MPa
Thermal response time	≤40s
Standard connection	Adjustable male thread
Alternative connections	No fixing device; adjustable female thread; fixed thread; fixed flange

Additional options in the full selection chart include compression-fitting threads and flanges, liquid-filled vibration-resistant construction, stainless corrosion-resistant construction and removable-insert protection. Confirm compatibility with the selected model and service conditions.

Webpage range selections

The Chinese product page lists −40°C to 80°C, 0–50°C, 0–100°C, 0–150°C, 0–200°C, 0–300°C, 0–400°C, 0–500°C and 0–600°C. The catalogue permits a custom range, stem length and thread size.

Remote and contact versions

6. WSSP remote-signal bimetal thermometer

Provides local mechanical indication with a remote temperature signal. Standard output is two-wire Pt100. Three-wire Pt100 and 4–20mA output are options. Electrical connection is available as a sensor connection head or an aviation-style plug connector.

7. WSSX electrical-contact bimetal thermometer

Provides local temperature indication and electrical contacts, with a junction-box connection. The catalogue supplies no contact voltage, current or switching-capacity rating; use the ordered instrument’s electrical specification.

Parameter	WSSP and WSSX specification
Dial diameter	60mm / 100mm / 150mm
Protective-tube diameter	6mm / 10mm
Measuring envelope	−40°C to 600°C; selectable range
Stem length	100mm reference; custom length
Orientation	Axial / radial / universal
Protection	IP55
Accuracy class	1.5
Thread	M16×1.5 / M27×2
Case / protective tube	Nickel-plated iron / 304 stainless steel
Pressure resistance	≤6MPa
Thermal response	≤40s
Connection	Adjustable male thread; optional no fixing device, adjustable female thread, fixed thread or fixed flange

The 60mm WSSP/WSSX tables specify class 1.5; the standard 60mm WSS mechanical models specify class 2.5. Keep these version-specific ratings separate. A remote signal and electrical-contact switching are distinct configurations, not automatically simultaneous functions.

Selecting the assembly

Specify dial diameter, orientation, output type, range, immersion length, thread size and materials. The code chart does not fully define all range, stem, thread-material, case-material, sensing-stem-material and dial options; discuss these details when ordering.

Ordering-code chart

8. Instrument, element and output codes

Segment	Code	Meaning
Instrument	W	Temperature-measuring instrument
Principle	S	Metal-expansion thermometer
Sensing element	S	Bimetal strip element
Sensing element	G	Bimetal rod element
Sensing element	T	Digital-display type
Liquid filling	Omitted	Standard construction
Liquid filling	N	Vibration-resistant type
Output	Omitted	Standard construction
Output	P	Remote signal
Output	X	Electrical contacts
Output	4~20mA	4–20mA output
Dial diameter	3	Ø60mm
Dial diameter	4	Ø100mm
Dial diameter	5	Ø150mm

A hyphen precedes the dial-size code. The chart prints these choices as -3, -4 and -5. The output token 4~20mA contains a tilde inside the code and should remain intact.

9. Orientation codes

Code	Meaning
0	Axial, straight form
1	Radial, angle form
2	135°, obtuse-angle form
5	Thermowell-type radial / angle form
6	Thermowell-type axial / straight form
7	Thermowell-type universal form
8	Universal-angle form

The chart’s example is **WSSN-581BF**: W temperature instrument, S metal-expansion principle, S bimetal strip, N vibration-resistant type, omitted standard output, Ø150mm dial, universal orientation, adjustable male thread and BF stainless corrosion-resistant construction.

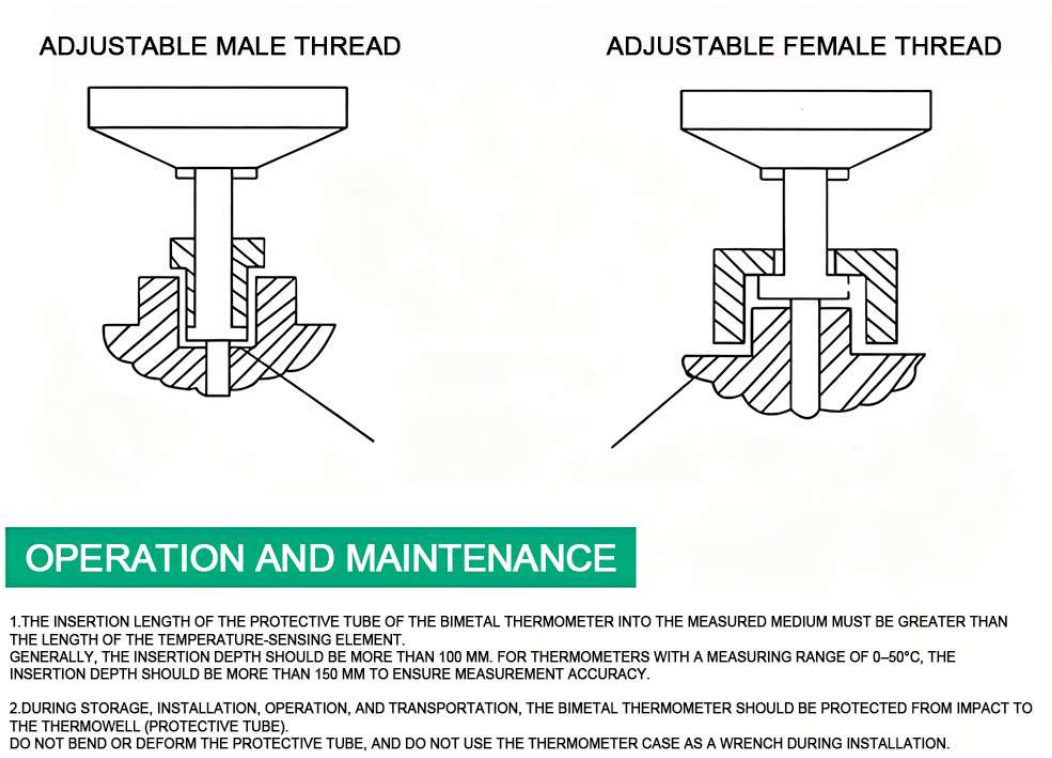
Connections and installation

10. Mounting and protection codes

Segment	Code	Meaning
Mounting	0	No fixing device
Mounting	1	Adjustable male thread
Mounting	2	Adjustable female thread
Mounting	3	Fixed thread
Mounting	4	Fixed flange
Mounting	5	Compression-fitting thread
Mounting	6	Compression-fitting flange
Protection	Omitted	Standard type
Protection	BF	Stainless corrosion-resistant construction
Protection	W	Protective type with removable insert

The chart allows custom stem length, temperature range and thread size. Code availability does not establish that every possible combination is suitable for every process condition.

11. Adjustable-thread installation reference



The English-site installation sheet above supplements the Chinese catalogue. It shows adjustable male and female thread fittings and gives two handling precautions. Its insertion-depth guidance is restated and qualified on the next page.

Use, configuration and source notes

12. Operation and maintenance

1. Immerse the protective tube beyond the length of the temperature-sensing element. The installation sheet gives a general insertion depth greater than 100mm, or greater than 150mm for a 0–50°C instrument, to maintain measurement accuracy. Select a sufficiently long stem for that installation; these requirements cannot be achieved with every 100mm reference stem.

2. Protect the protective tube from impact during storage, installation, use and transport. Do not bend or deform it. Do not use the instrument case as a wrench during installation.

13. Configuration differences

The Chinese webpages give a general class 1.5 value, while the model-by-model Chinese catalogue explicitly assigns class 2.5 to WSS-301, WSS-311 and WSS-381. This translation retains the detailed catalogue ratings. WSSP and WSSX retain their own class 1.5 specification. The catalogue describes a nickel-plated iron case; the webpage’s cast-iron wording is not extended to an unsupported manufacturing-method claim.

The −40°C to 600°C figure is the selectable measuring envelope, not an electronics ambient rating or a promise of a single universal dial span. The ≤6MPa pressure-resistance entry is retained as stated; the source does not provide a pressure-versus-temperature derating curve. Verify the assembled connection and any thermowell for the actual process conditions.

14. Original catalogue contents

Cover and contents; product introduction and construction / installation diagrams (printed page 01); selection chart (02); WSS-301 (03), WSS-311 (04), WSS-381 (05), WSS-401 (06), WSS-411 (07), WSS-481 (08), WSS-501 (09), WSS-511 (10), WSS-581 (11), WSSP (12), WSSX (13); rear-cover imprint. Repeated model specifications are consolidated into the comparison and common-specification tables without omitting parameters.

15. Source imprint and notice

Yueqing ELECALL Electric Co., Ltd. Address: No.246 Weishi Road, Yueqing Economic Development Zone, Yueqing, Zhejiang 325600, P.R. China. Telephone: 0577-62792850. Customer service: 4006 111 323. Website printed in the catalogue: www.elecall.cn. ELECALL reserves copyright.

The source states that the booklet provides general product information, actual applications may differ, and product improvements may change the information. Final interpretation is reserved by the company, whose engineering staff provide technical assistance. The booklet was printed on environmentally friendly paper.

English edition: complete translation of the Chinese 16-page catalogue, consolidated for readability, with the English installation-sheet supplement. Product photographs in the source illustrate the axial, radial and universal forms and the remote-signal and contact variants. No electrical pinout or contact rating has been inferred from those photographs.