

Temperature Measurement Technology



Our strength - your gain

All from a single source

The product range covers the entire measurement chain, from thermometers through measurement and control systems for temperature, pressure, humidity and other physical variables, up to customized automation software.



Easy ordering

The sectional catalog "Transducers for temperature and humidity" covers a large variety of thermocouples, resistance thermometers and humidity measuring instruments and accessories. The sectional catalog "Temperature sensors" contains a wide range of wire and thin-film temperature sensors. Stock items are indicated as such.

All the items are described in detail and provided with an article number.

The catalogs also contain the basics of temperature measurement technology and notes on the technical application.

All this information is also available from our Internet site at www.jumo.net.



German Calibration Service (DKD)

JUMO runs a calibration laboratory for temperature in collaboration with the German national metrology institute for providing scientific and technical services (PTB). Resistance thermometers, thermocouples and complete measurement loops are calibrated there. See the table opposite for the possible measurement ranges. The calibration certificate includes the technical data of the thermometer and measurement conditions, and summarizes measurement results and measurement uncertainties

Works test certificates can also be issued for the thermometers, and on-site calibrations performed at your company premises.

Object for calibration	Measurement range	Measurement uncertainty
resistance thermometers, direct-reading electronic thermometers (temperature measuring system), data loggers	0.01°C -80 to 0°C >0 to 90°C >90 to 300°C	0.005°C 0.015°C 0.010°C 0.015°C
- thermocouples	-80 to 200°C >200 to 300°C	0.2°C 0.3°C
- noble metal thermocouples	>300 to 1100°C	1.0°C
- base metal thermocouples, - direct-reading electronic thermometers	>300 to 1100°C	1.5°C
- resistance thermometers with transmitter, - direct-reading electronic thermometers, with transmitter	- 80 to 0°C >0 to 90°C >90 to 300°C	0.045°C 0.040°C 0.045°C
- temperature block calibrators	30 to 133°C >133 to 660°C >660 to 1100°C	0.2°C 0.0015°C x (t) 2.5°C

State-approved testing station KF2 for heat

The complete product range of temperature sensor heat meters complying with MID directives has type approval, and production is certified under Module D. As a supplier of resistance thermometers for the heat meter industry, JUMO runs an officially recognized testing laboratory. Resistance thermometers with type approval are measured, paired and certified here at three temperatures between 0°C and



Environmental protection

180°C.

For JUMO, environmental protection starts with purchasing environmentally-friendly raw materials and selecting suppliers who do not use ecologically harmful materials. It continues with monitoring the workplace, protecting the workforce, making minimum use of harmful substances and reducing residues and ends with all unavoidable residues being collected separately, recycled as much as possible and, if necessary, safely disposed of.

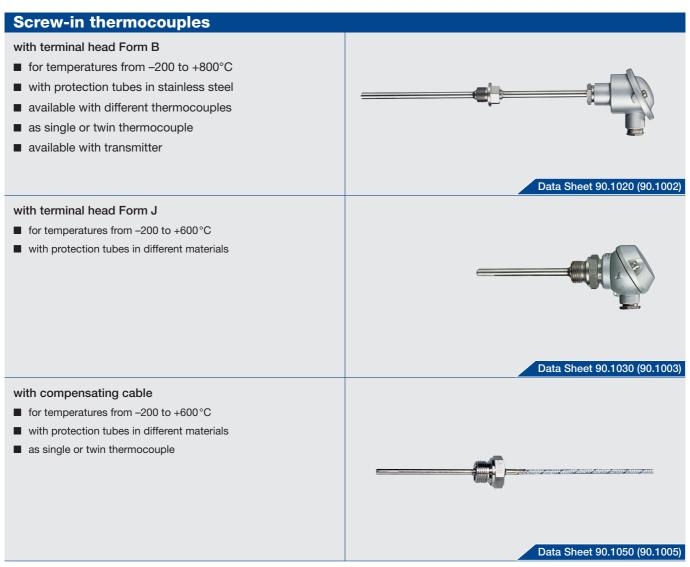
JUMO is certified to ISO 14 001.



Thermocouples

- wide temperature range from -200 to + 1600 °C
- styles to DIN; thermocouples to EN 60 584 and DIN 43 710
- temperature measurement at a single point
- fast response
- low heat conduction error
- for further technical descriptions, please look under the stated data sheet number at www.jumo.net

Applications: furnaces, engines, plastic machines and the chemical sector



Thermocouples

Thermocouples for equipment and systems tested to DIN 14597

screw-in and push-in versions

- for indirect heating installations to DIN 4754
- for temperatures up to 1500°C
- as single or twin thermocouple
- for use in water, oil or air
- with approved control and limiting devices



Data Sheet 90.1006

Screw-in melt thermocouples

for the plastics industry

- for temperatures from -40 to +600 °C
- protection tube and measuring tip in stainless steel
- various measuring tips
- thermocouple extension cables in PTFE or metal braiding
- insulated construction or joined to measuring tip



Data Sheet 90.1090

Push-in thermocouples

with terminal head Form A

- for temperatures from -200 to +1600 °C
- with protection tubes in different materials
- as single or twin thermocouples



Data Sheet 90.1110 (90.1101)

with terminal head Form B

- for temperatures from -200 to +1600 °C
- with protection tubes in different materials
- as single or twin thermocouples
- available with transmitter



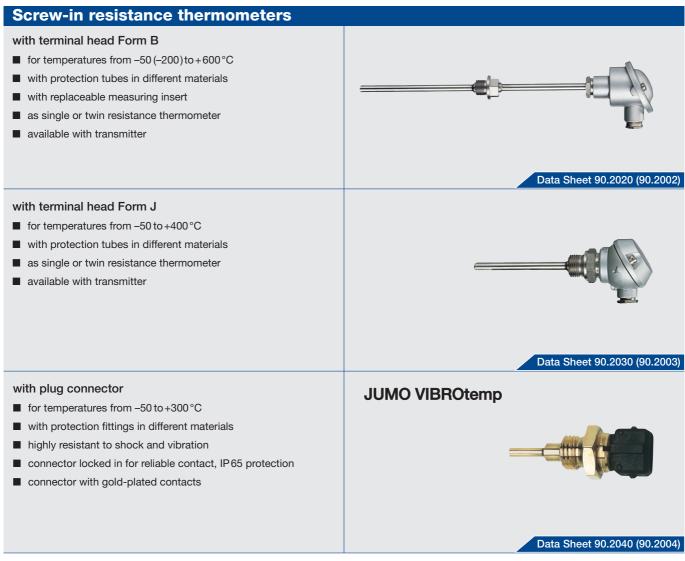
Data Sheet 90.1120 (90.1102)

Thermocouples

with compensating cable ■ for temperatures from 0 to +600 °C ■ with protection tubes in stainless steel ■ also with 90° cable entry Data Sheet 90.1150 (90.1105) with bayonet lock ■ for temperatures from 0 to +400 °C ■ with protection tubes in stainless steel ■ as single or twin thermocouples ■ good heat transfer through adjustable spring pressure ■ insertion and removal without tool Data Sheet 90.1190 (90.1109) Mineral-insulated thermocouples to DIN EN 60584 and DIN 43710 various versions ■ for temperatures from -200 to +1150 °C ■ flexible sheath, shockproof ■ protection tube diameter from 0.5 mm ■ fast response ■ fitting lengths to suit application Data Sheet 90.1210 (90.1221) **Insertion thermocouples JUMO FOODtemp** with several measurement points ■ for temperatures from -100 to +260 °C ■ steam-tight and pressure-proof ■ high mechanical strength ■ protection tube in stainless steel ■ up to five measuring points Data Sheet 90.1350 (90.1305)

- temperature ranges from -200 to +800 °C
- styles to DIN with temperature sensors to EN 60751
- high accuracy and long-term stability
- industry-specific versions
- certifiable precision resistance thermometers
- resistance thermometers with explosion protection
- for further technical descriptions, please look under the stated data sheet number at www.jumo.net

Applications: HVAC, food technology, machinery, medicine, automobile industry, energy charging and process technology



Screw-in resistance thermometers

with plug connector to DIN EN 175301

- for temperatures from -50 to +260 °C
- with protection fittings in different materials
- highly resistant to shock and vibration
- connector locked in for reliable contact, IP65 protection
- Available with transmitter
- GL approval for type 902044/20 and 902044/21



Data Sheet 90.2044 (90.2004)

with connecting cable

- for temperatures from -50 to +400 °C
- with protection tubes in different materials
- as single or twin resistance thermometer
- in 2-wire, 3-wire or 4-wire circuit
- connecting cables in PVC, silicone, PTFE or metal braiding



Data Sheet 90.2050 (90.2005)

Resistance thermometers for equipment and systems tested to DIN 14597

screw-in and plug-in versions

- for indirect heating installations to DIN 4754
- for temperatures up to +700°C
- as single, twin or triple resistance thermometer
- for use in water, oil or air
- for approved control and limiting devices



Data Sheet 90.2006

Screw-in melt resistance thermometers

for the plastics industry

- for temperatures from -40 to +400°C
- protection tube and measuring tip in stainless steel
- various measuring tips
- connecting cables in PTFE, PTFE-metal braiding or metal braiding



Data Sheet 90.2090

Push-in resistance thermometers

with terminal head Form B

- for temperatures from -50(-200) to +600 °C
- with protection tubes in different materials
- with replaceable measuring insert
- as single or twin resistance thermometer
- available with transmitter



Data Sheet 90.2120 (90.2102)

with terminal head Form J ■ for temperatures from -50 to +400 °C ■ as single or twin resistance thermometer available with transmitter Data Sheet 90.2130 (90.2103) with connecting cable ■ for temperatures from -50 to +400 °C ■ with protection tubes in different materials ■ as single or twin resistance thermometer - nn ■ in 2-wire, 3-wire or 4-wire circuit ■ connecting cables in PVC, silicone, PTFE or metal braiding Data Sheet 90.2150 (90.2105) with connection cablefor the solar heating system ■ for temperatures from -50 to +260 °C ■ for collector and accumulator temperature measurement ■ Long-term stability ■ Cost-effective design for solar heating systems ■ Connection cable made of PVC, PUR, silicone or PTFE Data Sheet 90.2153 with bayonet lock ■ for temperatures from -50 to +350 °C ■ with protection tubes in different materials as single or twin resistance thermometer ■ good heat transfer through adjustable spring pressure ■ insertion and removal without tools Data Sheet 90.2190 (90.2109) Mineral-insulated resistance thermometers to EN 60751 various versions ■ for temperatures from -50 (-200) to +600 °C ■ flexible sheath with shockproof measuring insert as single or twin resistance thermometer in 2-wire, 3-wire or 4-wire circuit ■ fast response fitting length to suit application Data Sheet 90.2210 (90.2221)

Insertion resistance thermometers

various versions

- for temperatures from -50to+260°C
- steam-tight and pressure-proof
- high mechanical strength
- as single or twin resistance thermometer
- for use in the food industry

JUMO FOODtemp

Data Sheet 90.2350 (90.2305)

Screw-in resistance thermometers for heat meters

with terminal head for direct installation

- for temperatures from 0 to 180 °C
- approval for heat meters, MID and national approval as replaceable temperature probes
- meets the requirements of EN 1434, AGFW 202 and FW211
- paired and verified in accordance with German calibration regulations
- production certified under MID Module D (CE mark and metrology labels)

with connecting cable for direct installation

- for temperatures from 0 to 180 °C
- approval for heat meters, MID and national approval as replaceable temperature probes
- meets the requirements of EN 1434, AGFW 202 and FW211
- approval for cold meters and combined cold/heat meters
- paired and verified in accordance with German calibration regulations
- production certified under MID Module D (CE mark and metrology labels)

JUMO HEATtemp Typ DL



Data Sheet 90.2424

JUMO HEATtemp Typ DS/DL



Data Sheet 90.2425

Push-in thermometers for heat meters

with connecting cable for immersion sleeve

- for temperatures from 0 to 180 °C
- approval for heat meters, MID and national approval as replaceable temperature probes
- meets the requirements of EN 1434, AGFW 202 and FW211
- approval for cold meters and combined cold/heat meters
- paired and verified in accordance with German calibration regulations
- production certified under MID Module D (CE mark and metrology labels)

JUMO HEATtemp Typ PL



Data Sheet 90.2434

Einsteck-Widerstandsthermometer

with connecting cable for immersion sleeve

- for temperatures from 0 to 180 °C
- approval for heat meters, MID and national approval as replaceable temperature probes
- meets the requirements of EN 1434, AGFW 202 and FW211
- approval for cold meters and combined cold/heat meters
- paired and verified in accordance with German calibration regulations
- production certified under MID Module D (CE mark and metrology labels)

JUMO HEATtemp Typ PS/PL

Data Sheet 90.2810

Surface resistance thermometers

various versions

- for temperatures from -50 to +260 °C
- with protection fittings in different materials
- for round and flat surfaces
- quick and easy installation
- low thermal mass



Data Sheet 90.2550 (90.2522)

Indoor and outdoor resistance thermometers

various versions

- for temperatures from -30 to +80 °C
- for use in HVAC
- IP20 protection to IP65
- quick and easy installation
- for 2-wire, 3-wire or 4-wire connections



Data Sheet 90.2520 (90.2523)

Test equipment for temperature and its traceability

- complete temperature measurement sets with indicator and DKD calibration certificate
- DKD calibrations as a service for: resistance thermometers, thermocouples, data loggers, measuring sets, block calibrators
- calibration range -80 to +1100 °C
- on-site calibration





Data Sheet 90.2721

Industry-specific versions

for the food and pharmaceutical industries

- for temperatures from -50 to +250 °C
- protection tube in stainless steel
- as single or twin resistance thermometer
- CIP-conform installation
- available with transmitter





Data Sheet 90.2810

Industry-specific versions

for the food and pharmaceutical industries

- with/without transmitter
- for temperatures from -50 to +260 °C
- protection tube in stainless steel
- process connections for the food and pharmaceutical industries
- configuration from a PC
- connection by M12 plug connector
- IP67 protection, with the machinery connector plugged in

JUMO Dtrans T100





Data Sheet 90.2815

for process technology (with ATEX approval)

- for temperatures from -200 to +600 °C
- protection tubes in stainless steel, titanium, tantalum, Iconel and Hastelloy
- with test approval
- intrinsically safe transmitter Ex "i"
- terminal head in flameproof enclosure Ex "d"

JUMO PROCESStemp



Data Sheet 90.2820

for sterilizers

- for temperatures from -70 to +200 °C
- steam-tight
- pressure-proof up to 5.0 bar
- as single, twin or triple resistance thermometer
- 2-wire, 3-wire or 4-wire circuit
- connecting cable in PTFE, FEP or silicone

JUMO STEAMtemp



Data Sheet 90.2830

Oil Level and temperature probes

- for temperatures from -40 to +140 °C
- As level or combined level and temperature probes
- Connection line: cross-linked polyester
- Measuring path of 50 mm or 62 mm
- Principle of measurement: hot wire



Insertion resistance thermometers with wireless measured value

Transmitter

- for temperatures from -30 to +260 °C or -200 to +600 °C
- radio frequency: 868 MHz, optionally 915 MHz
- wireless measurement transmission
- powered by a long-life lithium battery
- Open air range 300m

JUMO Wtrans Transmitter T01.G1



Data Sheet 90.2930

Receiver for RTD temperature probes with wireless transmission of the measured values

Receiver

- up to 16 transmitters for each receiver
- four analog outputs or two analog outputs and two relay outputs
- RS 485 interface with Modbus protocol
- configuration via keypad or PC (user-friendly setup program)
- DIN rail mounting
- voltage supply 110 to 240 V AC 20 to 30 V AC/DC

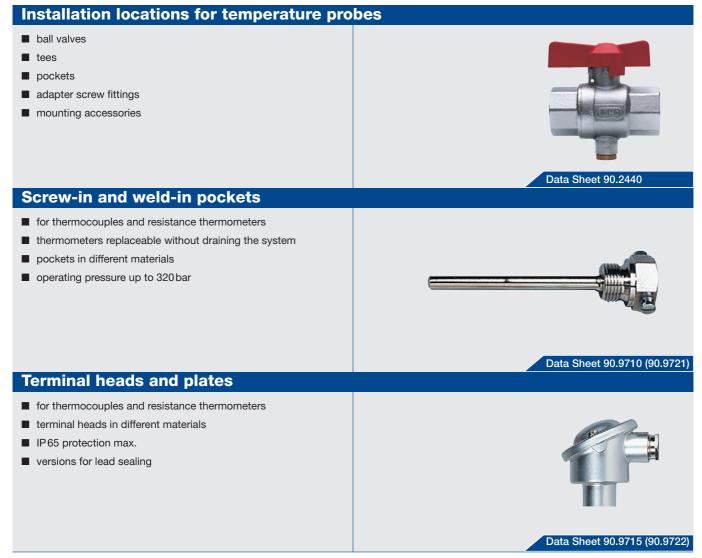


Data Sheet 90.2931

The instruments are not shown to scale

Accessories

- fittings for thermocouples and resistance thermometers
- cables for correct connection
- pockets and ball valve with probe location
- connectors for problem-free replacement
- for further technical descriptions, please look under the stated data sheet number at www.jumo.net



Accessories

Compensating and connecting cables

- compensating cables to EN 60584-3 and DIN 43713
- connecting cables for 2-wire, 3-wire and 4-wire circuit
- versions from -190 to +400 °C
- sheath in Teflon, silicone, PVC or glass fiber, with steel or stainless steel braiding
- for single or twin thermocouples



Data Sheet 90.9735 (90.9723)

Measuring inserts for screw-in thermocouples and resistance thermometers with terminal head Form B

- for temperatures from -200 to +1150 °C
- as single or twin insert
- available with transmitter



Data Sheet 90.9740 (90.9727)

Thermocouples to DIN 43 732

- for temperatures up to +1600 °C
- standardized thermal emf series to EN 60 584, Part 1 and DIN 43 710
- for push-in thermocouples to DIN 43 733



Data Sheet 90.9744 (90.9728)

Pipe fittings and flanges, sockets for bayonet locks

- for temperatures up to 550 °C
- for various fitting lengths
- simple installation and replacement
- pressure-proof sealing



Data Sheet 90.9750 (90.9725)

Connectors

- for temperatures from -60 to +260 °C
- easy replacement with fixed cabling
- quick connection of test instruments
- locking device for reliable contact

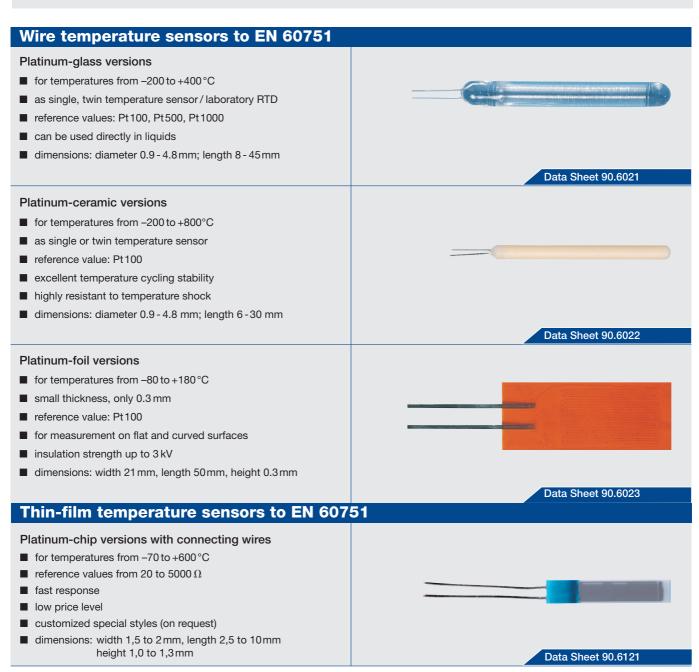


Data Sheet 90.9760(90.9726)

Platinum temperature sensors

- temperature ranges from -200 to +800 °C
- reference values and tolerances to EN 60751
- wire-wound styles in glass, ceramic and foil
- thin-film styles
- laboratory RTDs
- reference values: Pt100, Pt500, Pt1000 (special values on request)
- for further technical descriptions, please look under the stated data sheet number at www.jumo.net

Applications: HVAC, white goods, laboratory/medical engineering, automobile industry



Platinum temperature sensors

Thin-film temperature sensors to EN 60751

Platinum-chip versions on epoxy card

- for temperatures from -20 to +150 °C
- reference values: Pt100, Pt500 and Pt1000
- pre-assembled measuring insert
- supplied as panels
- also suitable for automated processing
- dimensions: width 4,3 mm, length 15 mm, height 2,2 mm width 4,3 mm, length 28 mm, height 2,2 mm

11106 55b 11106 1 0014

Data Sheet 90.6122

Platinum-chip versions with terminal clamps

- for temperatures from -30 to +105 °C
- reference values: Pt100, Pt500 and Pt1000
- featuring particularly rigid terminal clamps with high directional stability
- coated with an additional protective varnish
- dimensions: width 4,3 mm, length 6,3 mm, height 1,8 mm



Data Sheet 90.6123

Platinum-chip versions, cylindrical style

- for temperatures from -70 to +300 °C
- reference values: Pt100, Pt500, Pt1000
- readily adaptable to protection tubes
- high mechanical strength
- dimensions: diameters 3.8/4.8mm; length 15mm



Data Sheet 90.6124

Platinum-chip versions in SMD style

- for temperatures from -50 to +150 °C
- reference values: Pt100, Pt500, Pt1000
- supplied in blister belt for automatic insertion
- galvanic wrap-around contact with diffusion blockage
- dimensions: width 1.5 mm; length 3.1 mm; height 0.8 mm width 1.3 mm; length 2.0 mm; height 0.5 mm



Data Sheet 90.6125

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