

Temperature probes for heat meters

Basic type 902428/90



Operating Manual

90242890T90Z001K000

V1.00/EN/30069352/2025-02-19



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1 Safety information

General

This manual contains information that must be observed in the interest of your own safety and to avoid material damage. This information is supported by symbols which are used in this manual as indicated.

Please read this manual before starting up the device. Store this manual in a place that is accessible to all users at all times.

If difficulties occur during startup, please do not intervene in any way that could jeopardize your warranty rights!

Warning symbols



WARNING!

This symbol in connection with the signal word indicates that **personal injury** may occur if the respective precautionary measures are not carried out.



READ THE DOCUMENTATION!

This symbol, which is attached to the device, indicates that the associated **documentation for the device** must be **observed**. This is necessary to identify the nature of the potential hazard, and to take measures to prevent it.

Note symbols



NOTE!

This symbol refers to **important information** about the product, its handling, or additional benefits.



DISPOSAL!

At the end of its service life, the device and any batteries present do not belong in the trash! Please ensure that they are **disposed of** properly and in an **environmentally friendly** manner.

The following standards and directives apply to the use of temperature probe pairs for measuring the forward flow and reverse flow temperature in a heat exchanger system:

- Product standard DIN EN 1434
- Product standard DIN EN 60751
- Directive 2014/32/EU, Annex I and MI-004

Specifications for electrical installations must be observed.

All installation and maintenance work must be performed by specialist staff trained for this task.

All notes listed in the installation instructions must be observed.

Identification markings and metrology-relevant safety markings/main stamps must not be damaged or removed – otherwise the temperature probes are no longer admissible for use!

Route the measurement signal lines so that they are at least 50 mm away from other lines, such as grid supply lines and data transmission lines. We recommend installing lines and ALUs 300 mm away from strong electromagnetic fields, e.g. from frequency-controlled pumps and high-voltage power lines.

To protect against damage and pollutants, the temperature probes must not be removed from their packaging until immediately before installation.

Do not wind, bend, extend, or shorten the temperature probe lines.

When connecting to an ALU, always connect the temperature probes first before connecting the volume measuring unit.



WARNING!

Risk of burns!

The installation process must be carried out by trained personnel.

When using water additives (corrosion protection, etc.), the operator must make sure there is sufficient corrosion resistance before installing the temperature probe.

With direct mounting, the temperature probe is immersed in the pipeline without any additional immersion sleeve. During dismounting, always make sure that hot medium does not escape from the pipeline.

▶ Drain the pipeline system or seal off the temperature probe's installation location to relieve pressure.

2.1 Object of these instructions and purpose of application

The standard DIN EN 1434 describes the requirements for heat meters and its components. When combining sub-components (flow sensor, temperature probe pairs, ALU) to form a heat meter, the standard prescribes platinum RTD temperature probes according to the standard DIN EN 60751 because these probes have sufficient measurement stability, accuracy, and interchangeability.

These days, the latest heat meters use various nominal values on the ALU side (resistance value at 0 °C). The nominal values are normally 100 Ω (Pt100), 500 Ω (Pt500), and 1000 Ω (Pt1000).

The RTD temperature probes from the type series 902428/90 for direct mounting are type-tested according to the European Measuring Instruments Directive 2014/32/EU (MID) including Annexes I and MI-004. The paired temperature probes are suitable for being connected to an ALU of a heat meter and measure the difference between the inflow and outflow temperature of a heat exchanger system.

The temperature probes are made up of a corrosion-resistant protection fitting. The connection line is permanently connected to the temperature probe.

In order to meet the metrological requirements of the European Measuring Instruments Directive 2014/32/EU (MID) and the Annex MI-004, the temperature probes are calibrated at three temperatures and paired according to a special mathematical process in order to comply with the tolerance for the temperature difference. The lower limit for the temperature difference is 3 K.

2 General information

2.2 Identification marking

Each temperature probe pair is equipped with a nameplate containing the following information:

- CE identification marking with ID codes for the notified bodies appointed to certify module D (production quality assurance)
- Metrology identification marking, including the two digits for the year in which the identification marking was created
- Logo for the owner of the type examination certificate
- Type examination certificate number
- Pair number/ID
- Manufacturing date (year/calendar week)
- Manufacturing location (in-house code)
- Type number
- Admissible measuring range (temperature, temperature difference)
- Maximum pressure stage
- Nominal value
- Manufacturer's address

The inflow and outflow probes are distinguished by colored identification markings on the temperature probe's cable (red: inflow, blue: outflow) or using an identification marking on the nameplate (V = inflow, R = outflow).

3 Technical data

Connection	Ferrules, tin-plated connecting wires
Connection line	PVC, PUR (TPE), silicone; unshielded, shielded
Process connection	3/8" screw connection
Protection tube	Stainless steel Ø 3.5 mm
Measuring insert	Platinum film resistor with accuracy classes according to DIN EN IEC 60751
Nominal value	Pt100, Pt500, Pt1000
Electrical connection	Two-wire circuit, four-wire circuit
Temperature	0 to 150 °C
Temperature difference	3 to 150 K
Minimum immersion depth	15 mm
Insertion length	75 to 150 mm
Maximum pressure	PS 16
Flow velocity	2 m/s (water)
Thermoelectric voltage	± 5 µV
Environmental influences	
Climatic	5 to 55 °C
Protection type	IP54 (as delivered condition) It must be ensured in heat applications that the dew point is not reached or the temperature falls below this.
Mechanical	M3
Maximum measuring current	The maximum measuring current is calculated using the maximum admissible power loss of 5 mW. Depending on the nominal values, this results in the following effective current values: Pt100: 1783 µA Pt500: 797 µA Pt1000: 564 µA
Response times	$t_{0,5} \leq 2.0 \text{ s}$ $t_{0,9} \leq 5.0 \text{ s}$
Sensor accuracy class	Class F0.3 according to DIN EN IEC 60751; restricted tolerances optional When using two-wire technology, the display will be systematically higher due to the line resistance (see maximum connection length according to DIN EN 1434).

4 Installation

If the temperature probe pair is connected to an ALU, make sure that the probe's nominal value matches that of the processing ALU.

Furthermore, make sure that the installation point is deep enough to prevent damage to the tip of the probe when screwing in.

The temperature probe must be installed in the pipe so that a sufficient immersion depth is guaranteed which is greater than the minimum immersion depth in all cases.

During installation, the connection line must not be shortened or extended as this would impair compliance with the tolerance (for two-wire technology).

To prevent an inductive effect, the connection line must not be wound.

The connection line must not be laid alongside or wrapped around hot pipes because the line resistance and its temperature dependence are considered in the measurement result for temperature probes using two-wire technology.

Following successful mounting, the temperature probes must be secured against manipulation with a lead seal. The lead sealing hole in the fastening screw or nameplate is intended for this purpose. The lead sealing set is available as part no. 00650727.

The installation point of the inflow and outflow probes must be identical (symmetrical installation), unless the non-symmetrical installation is approved by the meter manufacturer.



NOTE!

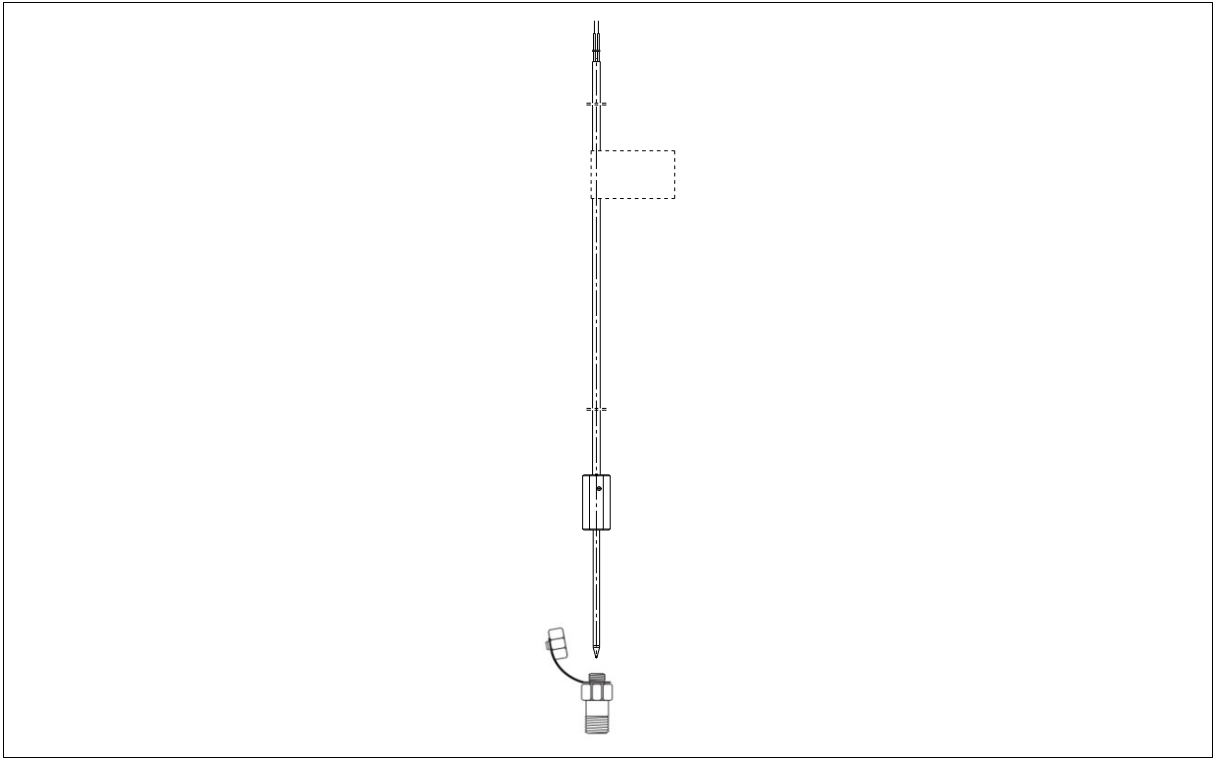
The following specifications apply for Germany according to the technical directives TR-K8 and TR-K9: for heat/cold meters with nominal flow rates $\leq q_p 6 \text{ m}^3/\text{h}$ the temperature probe must only be installed with direct immersion when newly installing the section of the pipeline in the measuring point area with nominal pressures $\leq 16 \text{ bar}$.

Installation is carried out in a Twinlok measuring nipple according to the following figure.

1. Unscrew plug.
2. Screw temperature probe flush into the measuring nipple.

The way the Twinlok measuring nipple works is to provide a self-sealing measuring point in pipes with liquid media so that the temperature within the pipe can be measured.

4 Installation



5 Maintenance

In order to maintain measurement stability, a measurement inspection must be carried out when the national calibration period has elapsed to check that the maximum permissible error (MPE) is observed.

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EU-Konformitätserklärung

EU declaration of conformity / Déclaration UE de conformité

Dokument-Nr. CE 461
Document No. / Document n°.

Hersteller JUMO GmbH & Co. KG
Manufacturer / Etabli par

Anschrift Moritz-Juchheim-Straße 1, 36039 Fulda, Germany
Address / Adresse

Produkt
Product / Produit

Name <i>Name / Nom</i>	Typ <i>Type / Type</i>	Typenblatt-Nr. <i>Data sheet no. / N° Document d'identification</i>
JUMO HEATtemp - RTD - Needle probe	902428/90	

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Anforderungen der Europäischen Richtlinien erfüllt.

We hereby declare in sole responsibility that the designated product fulfills the requirements of the European Directives.

Nous déclarons sous notre seule responsabilité que le produit remplit les Directives Européennes.

1. Richtlinie

Directive / Directive

Name MID 2014/32/EU
Name / Nom

Konformitätsbewertungsverfahren Mod. B+D
*Conformity assessment procedure /
Procédure d'évaluation de la conformité*

Datum der Erstanbringung des CE-Zeichens auf dem Produkt 2009

*Date of first application of the CE mark to the product /
Date de 1ère application du sigle sur le produit*

Dokument-Nr.
Document No. / Document n°.

CE 461

EU-Konformitätserklärung

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6 Declaration of conformity

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Gültig für Typ

Valid for Type / Valable pour le type

902428/90

1.1 EU-Baumusterprüfbescheinigung

EU type examination certificate / Certificat d'examen de type UE

Zertifikatsnummer

CH-MI004-09009-02

Certificate number / Numéro de certificat

Notifizierte Stelle

Notified Body / Organisme notifié

Eidgenössisches Institut für Metrologie METAS -
Zertifizierungsstelle METAS-Cert, Lindenweg 50,
3003 Bern-Wabern, Switzerland

Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Referenz

Reference / Référence

EN 1434

Ausgabe

Edition / Édition

2022

Bemerkung

Comment / Remarque

Qualitätssicherung bezogen auf den Produktionsprozess

Quality assurance of the production process / L'assurance de la qualité de la production

Zertifikatsnummer

Available on request.

Certificate number / Numéro de certificat

Notifizierte Stelle

Notified Body / Organisme notifié

Physikalisch-Technische-Bundesanstalt (PTB),
Bundesallee 100, 38116 Braunschweig,
Germany

Kennnummer

Identification no. / N° d'identification

0102

Allgemeine Bemerkungen

General remarks / Observations générales

Annex II Module D of Directive 2014/32/EU of the European Parliament and of the Council of 26
February 2014 on measuring instruments (ABI. EG Nr. L 180)

Physikalisch-Technische Bundesanstalt Braunschweig, Body No.: 0102

Conformity assessment body, Assessment of QM-Systems of manufacturers of measuring
instruments

Certificate No.: DE-M-AQ-PTB002

Dokument-Nr.

Document No. / Document n°.

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EU-Konformitätserklärung

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Aussteller

Issued by / Etabli par

JUMO GmbH & Co. KG

Ort, Datum

Place, date / Lieu, date

Fulda, 2024-09-30

Rechtsverbindliche Unterschriften

Legally binding signatures /

Signatures juridiquement valable

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i. V. Sevil Davarci

Leiter Managementsysteme
i. V. Matthias Raab

6 Declaration of conformity



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