Temperature probes

for combined cold/heat meters

Basic types 902428/30 and 902428/40
Basic types 902438/30 and 902438/32

Basic types 902455/30 and 902455/40
Basic types 902465/30 and 902465/32

Operating Manual

90242830T90Z001K000

V3.00/EN/00722998/2025-02-21

Table of contents

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!

The following standards and directives apply to the use of pairs of temperature probes for measuring the inflow and outflow 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
- TR-K7.1, TR-K7.2, TR-K8 and TR-K9
- German Weights and Measures Act (MessEG)
- German Weights and Measures Directive (MessEV)

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 computer units 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 a computer unit, always connect the temperature probes first before connecting the volume measuring unit.

Warning symbols

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 their sub-components. When combining sub-components (flow sensor, pair of temperature probes, computer unit) 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 computer unit 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 902428/30, 902428/40 and 902455/30, 902455/40 for direct mounting and 902438/30, 902438/32 and 02465/30, 902465/32 for installation in immersion sleeves are type-tested according to the European Measuring Instruments Directive 2014/32/EU (MID) including Annexes I and MI-004 as well as Annex 4 Module D of the German Weights and Measures Act. The paired temperature probes are suitable for being connected to a computer unit for a heat meter and measuring the difference between the inflow and outflow temperature in a heat exchanger system.

The temperature probes are made up of a corrosion-resistant protection fitting. The connecting cable 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 as well as Annex 4 Module D of the German Weights and Measures Act, 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.

2.2 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

Temperature range	
902428/30, 902428/40	0 to 180 °C
902455/30, 902455/40	0 to 150 °C
902438/30, 902438/32	0 to 180 °C
902465/30, 902465/32	0 to 150 °C
	The maximum operating temperature of the immersion sleeves must be observed.
Protection type	IP65 (as delivered condition) In heat applications, it must be ensured that the dew point is not reached or undershot.
Temperature difference	3 to 150 K
Maximum pressure	PS25 for a water flow velocity of 2 m/s
Electrical connection	Two-wire, four-wire
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	
Temperature probe, direct measurement	
902428/30, 902428/40	$t_{0,5} \leq 6{,}0$ s
902455/30, 902455/40	
Temperature probe, in immersion sleeve	
902438/30, 902438/32	$t_{0,5} \leq 12{,}0$ s
902465/30, 902465/32	
Minimum immersion depth	30 mm
Nominal value	Pt100, Pt500, Pt1000 (see identification marking for temperature probes)
Tolerance sensor	Class F0.3 according to DIN EN 60751:2023 / IEC 60751:2022; 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).

If the pair of temperature probes is connected to a computer unit, make sure that the probe's nominal value matches that of the processing computer unit.

Furthermore, make sure that the installation location is deep enough to prevent damage to the tip of the probe or immersion sleeve 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 connecting cable must not be shortened or extended as this would impair compliance with the tolerance (for two-wire technology).

Extending the connecting cable is admissible only using an extension socket for temperature probe pairs according to the mounting specifications 90244299A47Z001K000.

To prevent an inductive effect, the connecting cable must not be wound.

The connecting cable 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 seal. The sealing hole in the fastening screw or nameplate is intended for this purpose. The sealing set is available as part no. 00650727.

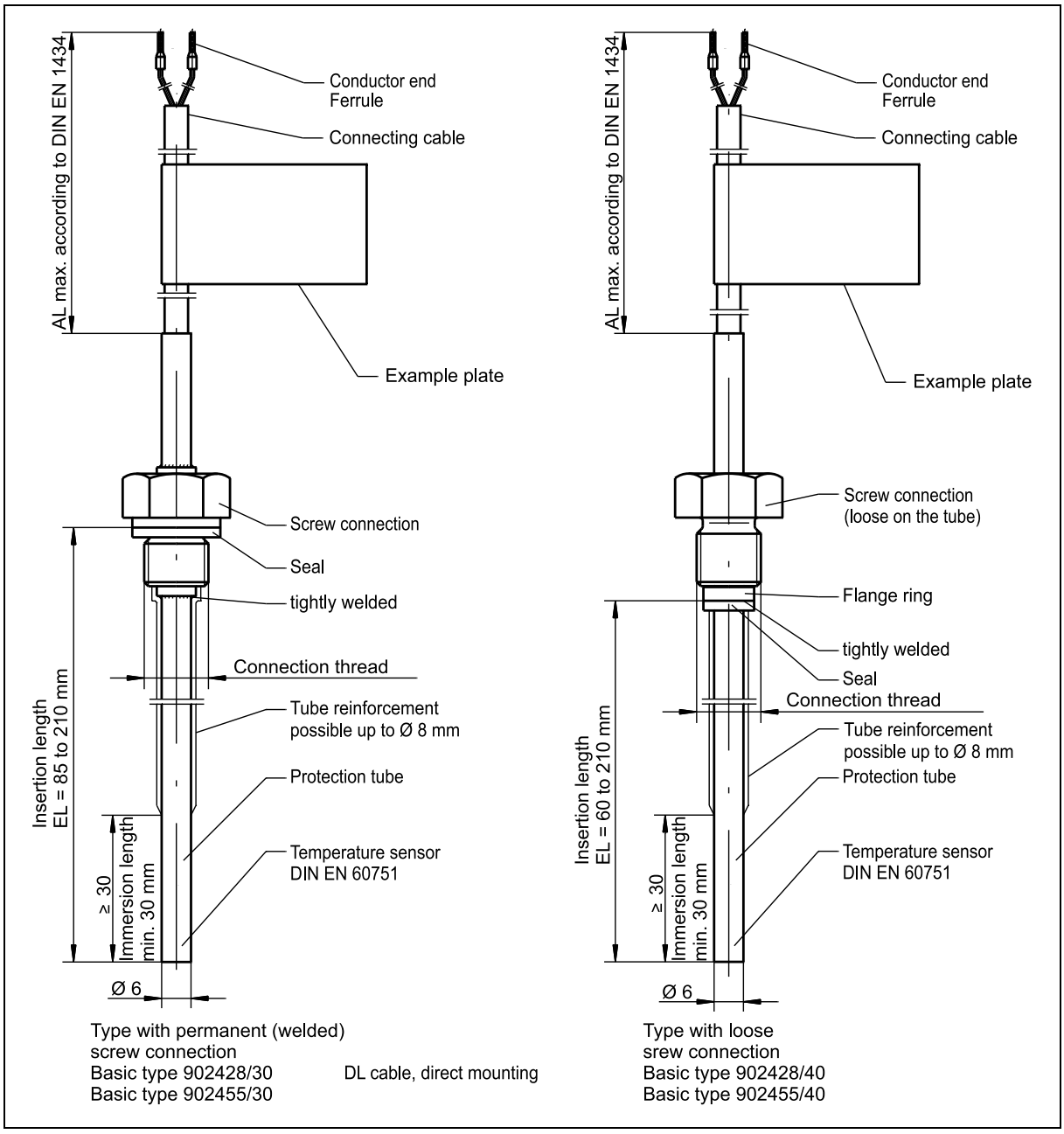
The installation point of the inflow and outflow probes must be identical (symmetrical installation), unless the non-symmetrical installation is approved by the meter manufacturer.

NOTE!

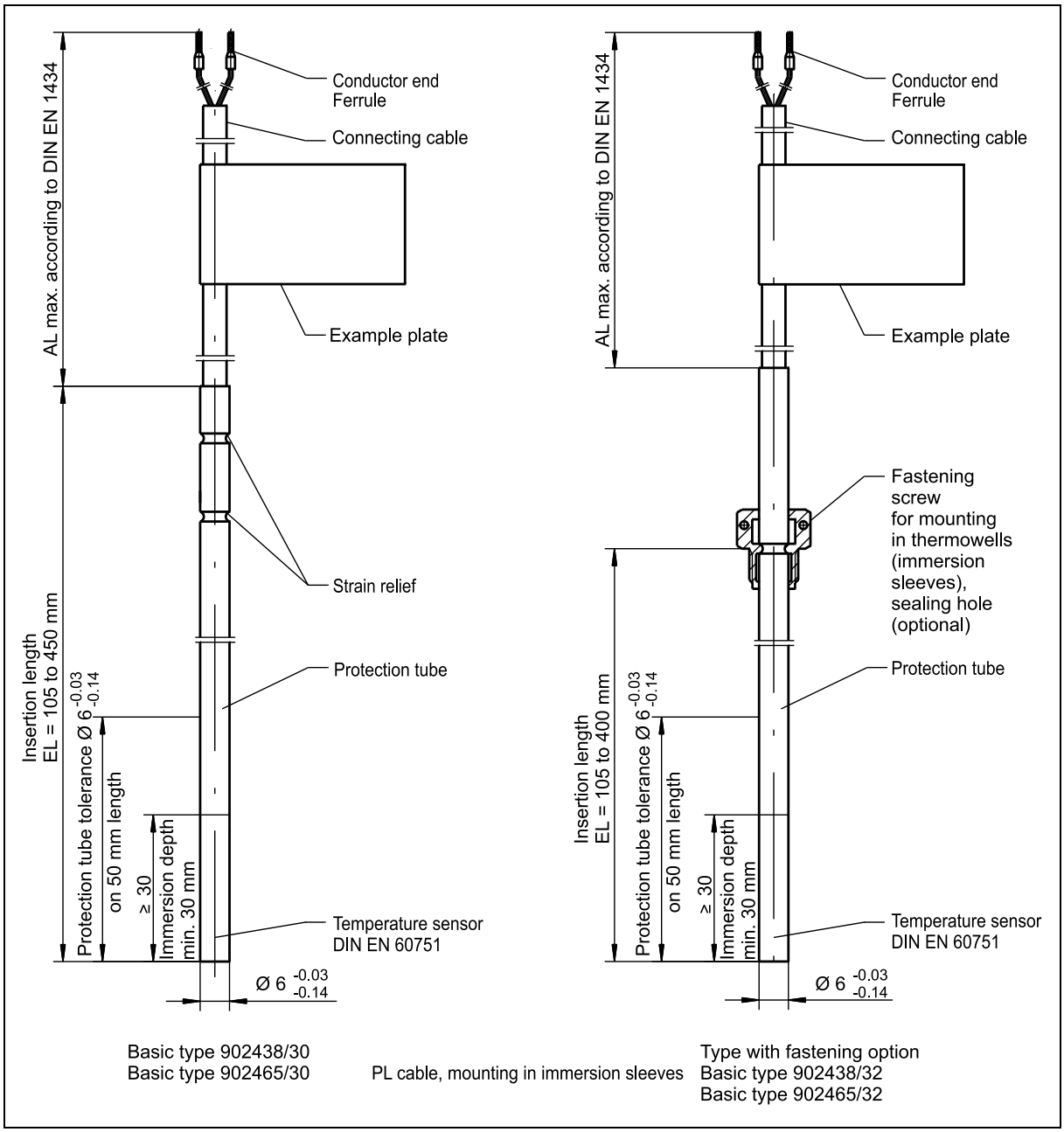
The following specifications apply for Germany according to the technical directives TR-K8 and TR-K9: For heat/cold meters with nominal flow rates less than or equal to qp 6 m^3/h, the temperature probe must only be installed with direct immersion when newly installing the section of the pipe in the measuring point area with nominal pressures less than or equal to 16 bar. Tolerances apply for existing immersion sleeves.

4 Installation

4.1 Temperature probes for direct mounting (902428/30, 902455/30, 902428/40, 902455/40)



4.2 Temperature probes in immersion sleeves (902438/30, 902465/30, 902438/32, 902465/32)



4 Installation

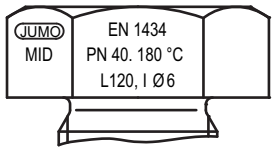
NOTE!

When installing temperature probes in immersion sleeves, it must be ensured that the admissible degree of tolerance between the temperature probe's outer diameter and the internal diameter of the immersion sleeve is adhered to. The temperature probe's outer diameter is (6 -0.03/-0.14) mm.

There are two possible versions of immersion sleeve:

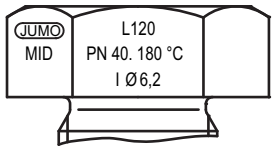
Version 1

Immersion sleeve internal diameter: (6 +0.08/-0.00) mm
This version complies with the DIN EN 1434-2 standard and is preferred. The immersion sleeve is marked by an appropriate DIN EN 1434 standard reference and the insertion length, as well as pressure stage, internal diameter, maximum operating temperature, and JUMO company logo.



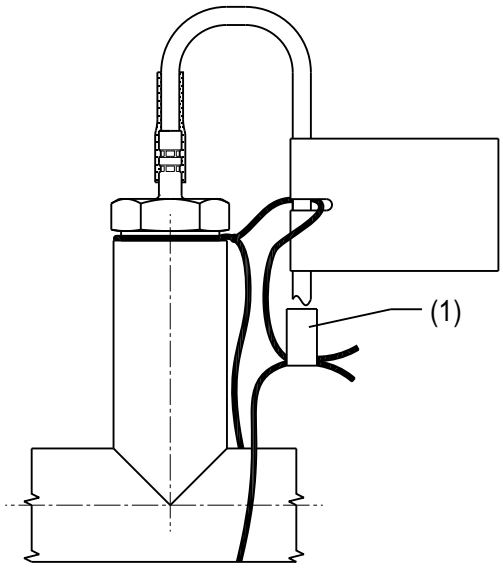
Version 2

Immersion sleeve internal diameter: (6.2 +0.00/-0.05) mm
This version does not comply with specifications from standards, but has the right metrological properties nonetheless. Compared with version 1, the marking makes no reference to DIN EN 1434.



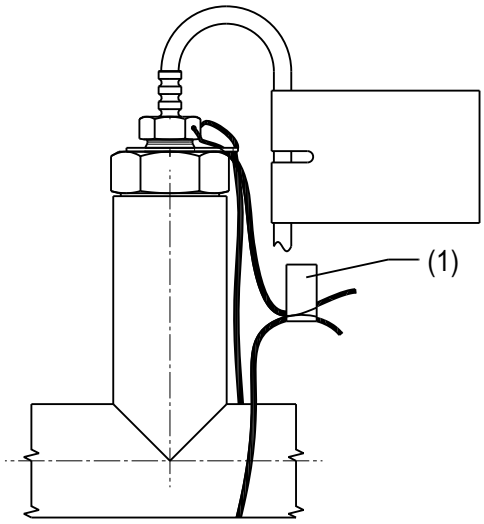
4.3 Lead sealing

Basic type 902428/30, 902455/30



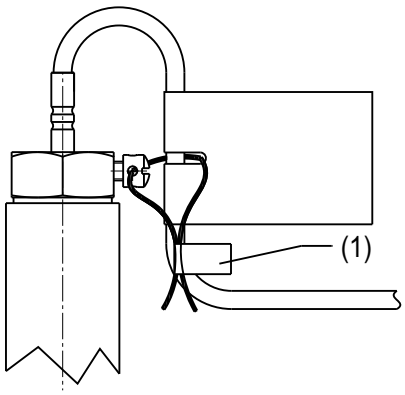
(1) Lead seal

Basic type 902428/40, 902455/40



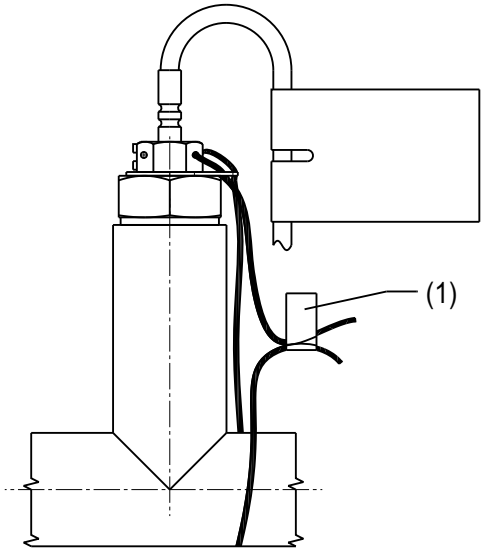
(1) Lead seal

Basic type 902438/30, 902465/30



(1) Lead seal

Basic type 902438/32, 902465/32



(1) Lead seal

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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Konformitätserklärung

Dokument Nr.: DE-015

Hersteller: JUMO GmbH & Co. KG

Anschrift: Moritz-Juchheim-Straße 1, 36039 Fulda, Germany

Produkt :

Beschreibung	Temperaturfühler für Kältezähler
Typ/ Serie	902455/30; 902455/40; 902455/50; 902465/30; 902465/32
Typenblatt-Nr.	902455; 902465

Der Hersteller bestätigt, dass der oben beschriebene Gegenstand der Erklärung das Mess- und Eichgesetz und die darauf gestützten Rechtsverordnungen einhält.

Angewandte Gesetze:

MessEG [Mess- und Eichgesetz] Ausgabe: 2013

Angewendete Normen:

DIN EN 1434-1	Ausgabe: 2019
DIN EN 1434-2	Ausgabe: 2019
DIN EN 1434-4	Ausgabe: 2019
DIN EN 1434-5	Ausgabe: 2019
DIN EN 60751	Ausgabe: 2009

Angewendete Regelwerke:

Ermittelter Regeln und Erkenntnisse des Regelermittlungsausschusses nach § 46 des Mess- und Eichgesetzes Ausgabe: 2022

Baumusterprüfbescheinigung (Bauartzulassung):

DE-15-M-PTB-0050 Aussteller: PTB Berlin

Anerkannte Qualitätssicherungssysteme der Produktion:

Anlage 4 Teil B Modul D der Mess- und Eichverordnung vom 11.12.2014 (BGBl. I S. 2010), Abs. 3.2 u. 3.3
Physikalisch Technische-Bundesanstalt Braunschweig, Nr. der Stelle: 0102
Konformitätsbewertungsstelle – QM-Systembewertungen von Messgeräteherstellern
Zertifikatsnummer: DE-M-AQ-PTB002

Aussteller

Firma
JUMO GmbH & Co. KG, Fulda

Ort, Datum: Fulda, 2022-11-11

Fulda, 2022-11-11

Rechtsverbindliche Unterschriften:

BL Globaler Vertrieb
Markus Belmer

ppa.

Qualitätsbeauftragter und Leiter Qualitätswesen
i. V. Harald Gienger

i. V.

6 Declaration of conformity

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EU-Konformitätserklärung

EU declaration of conformity / Déclaration UE de conformité

Dokument-Nr.
Document No. / Document n°.
CE 432

Hersteller
Manufacturer / Etabli par
JUMO GmbH & Co. KG

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

Produkt
Product / Produit

Name *Name / Nom*	**Typ** *Type / Type*	**Typenblatt-Nr.** *Data sheet no. / N° Document d'identification*
JUMO HEATtemp - RTD - Type DL and PL	902428/30	902428
JUMO HEATtemp - RTD - Type DL and PL	902428/40	902428
JUMO HEATtemp - RTD - Type DL and PL	902438/30	902438
JUMO HEATtemp - RTD - Type DL and PL	902438/32	902438

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

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1. Richtlinie
Directive / Directive

Name *Name / Nom*	MID
Fundstelle *Reference / Référence*	2014/32/EU
Bemerkung *Comment / Remarque*	Mod. B+D
Datum der Erstanbringung des CE-Zeichens auf dem Produkt *Date of first application of the CE mark to the product / Date de 1ère application du sigle sur le produit*	2007

Gültig für Typ
Valid for Type / Valable pour le type

902428/30
902428/40
902438/30
902438/32

1.1 EU-Baumusterprüfbescheinigung
EU type examination certificate / Certificat d'examen de type UE

Fundstelle *Reference / Référence*	DE-06-MI004-PTB011
Notifizierte Stelle *Notified Body / Organisme notifié*	Physikalisch-Technische-Bundesanstalt (PTB)
Kennnummer *Identification no. / N° d'identification*	0102

6 Declaration of conformity

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Angewendete Normen/Spezifikationen

Standards/Specifications applied / Normes/Spécifications appliquées

Fundstelle *Reference / Référence*	**Ausgabe** *Edition / Édition*	**Bemerkung** *Comment / Remarque*
EN 1434-1	2015+A1:2018	The edition 2007 is meet for presumtion of conformity
EN 1434-2	2015+A1:2018	The edition 2007 is meet for presumtion of conformity
EN 1434-4	2015+A1:2018	The edition 2007 is meet for presumtion of conformity
EN 1434-5	2015+A1:2019	The edition 2007 is meet for presumtion of conformity
EN 60751	2008	

Anerkannte Qualitätssicherungssysteme der Produktion

Recognized quality assurance systems of production / Systèmes de qualité reconnus de production

Notifizierte Stelle *Notified Body / Organisme notifié*	**Kennnummer** *Identification no. / N° d'identification*
Physikalisch-Technische-Bundesanstalt (PTB)	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 (ABl. 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

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Aussteller
Issued by / Etabli par

JUMO GmbH & Co. KG

Ort, Datum
Place, date / Lieu, date

Fulda, 2020-01-21

Rechtsverbindliche Unterschriften
Legally binding signatures /
Signatures juridiquement valable

Bereichsleiter Globaler Vertrieb
ppa. Reiner Riedl

Qualitätsbeauftragter und Leiter Qualitätswesen
i. V. Harald Gienger

7 China RoHS

产品组别 Product group: 902428	产品中有害物质的名称及含量 China EEP Hazardous Substances Information					
部件名称 Component Name						
	铅 （Pb）	汞 （Hg）	镉 （Cd）	六价铬 （Cr(VI)）	多溴联苯 （PBB）	多溴二苯醚 （PBDE）
外壳 Housing (Gehäuse)	○	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	X	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	○	○	○	○	○	○

本表格依据SJ/T 11364的规定编制。
This table is prepared in accordance with the provisions SJ/T 11364.
○：表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
Indicate the hazardous substances in all homogeneous materials' for the part is below the limit of the GB/T 26572.

×：表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。
Indicate the hazardous substances in at least one homogeneous materials' of the part is exceeded the limit of the GB/T 26572.

产品组别 Product group: 902438	产品中有害物质的名称及含量 China EEP Hazardous Substances Information
部件名称 Component Name	

	铅 （Pb）	汞 （Hg）	镉 （Cd）	六价铬 （Cr(VI)）	多溴联苯 （PBB）	多溴二苯醚 （PBDE）
外壳 Housing (Gehäuse)	○	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	○	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	○	○	○	○	○	○

本表格依据SJ/T 11364的规定编制。
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7 China RoHS

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