



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAA00002RV
Revision No:
5

This is to certify:
that the Temperature Sensor

with type designation(s)
902044/20, 902044/21, 902190, 902150, 902815

issued to
JUMO GmbH & Co. KG
Fulda, Hessen, Germany

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
902044/20	D	B	A/B*	-	B (IP65)
902044/21	D	B	A/B*	-	B (IP65)
902190	D	A/B	B	-	A (IP20)/C (IP66)
902150	D	A/B	B	-	A (IP20)/C (IP66)
902815	D	B	A/B*	-/B**	C (IP67)

Issued at **Hamburg** on **2025-04-09**

This Certificate is valid until **2030-04-26**.

DNV local unit: **Augsburg**

Approval Engineer: **Holger Jansen**



for **DNV**

Digitally signed by: Dariusz Lesniewski
Location: DNV SE, Germany

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Type **902044/20**: Screw in Resistance Temperature Sensor with junction box Pg 9
Type **902044/21**: Screw in Resistance Temperature Sensor with junction box Pg 11

- Measuring-resistor: Pt100, Pt500 or Pt1000
- Measuring range -50°C to +200°C
- Connection: 2-, 3- or 4 wire connection
- Protective fitting-length: 50 to 500mm
- Protective fitting-diameter: 8mm
- Mounting thread diameter: 12 to 60mm
- Pressure range: 50bar @ max. 200°C
- Temperature range: -40 up to 125°C (terminal head)
- Material of protection tube: stainless steel 1.4571.

Vibration location class:

- B for protective fitting tube length max.250mm
- A for protective fitting tube length max.500mm

Type **902190**: Insert Resistance Temperature Sensor (bayonet type) with attached cable

- Measuring-resistor: Pt100, Pt500 or Pt1000
- Measuring range -50°C to +400°C
- Connection: 2-, 3- or 4 wire connection
- Protective fitting-length: 3-150mm
- Protective fitting-diameter: 6-8mm
- Installation length: 20-400mm
- Total length 20-10.000mm
- Mounting thread diameter: 4 to 60mm
- Material of protection tube: stainless steel
- Degree of protection:
 - IP20 (PTFE or PTFE-metal braiding or metal braiding-Glass silk), **damp heat location class A**
 - IP66 (Silicone or PTFE with SilGel), **damp heat location class B**
- Electrical connections: bare strands, tin-plated strands, strands with ferrules or multipolar connector

Type **902150**: Insert Resistance Temperature Sensor with attached cable

- Measuring-resistor: Pt100, Pt500 or Pt1000
- Measuring range -50°C to +400°C
- Connection: 2-, 3- or 4 wire connection
- Protective fitting-length: 3-150mm
- Protective fitting-diameter: 6-8mm
- Installation length: 20-400mm
- Total length 20-10.000mm
- Material of protection tube: stainless steel
- Degree of protection:
 - IP20 (PTFE or PTFE-metal braiding or metal braiding-Glass silk), **damp heat location class A**
 - IP66 (Silicone or PTFE with SilGel), **damp heat location class B**
- Electrical connections: bare strands, tin-plated strands, strands with ferrules or multipolar connector

Type **902815**: Screw in Resistance Temperature Sensor with or without transmitter, M12-connector

- Measuring-resistor: Pt100, Pt500 or Pt1000
- Measuring ranges:
 - 50°C to +200°C (without transmitter version 1/1.1)
 - 50°C to +150°C (with transmitter version 2/2.1)
 - 50°C to +260°C (with transmitter + extension tube version 3)
- Ambient temperature head area:
 - 30°C to 90°C (without transmitter version 1/1.1)
 - 30°C to 85°C (with transmitter version 2/2.1 and 3)
- Connection: 2-, 3- or 4 wire RTD connection (without transmitter), 4...20mA (with transmitter)
- Protective tube diameter: 6 to 8mm
- Installation lengths*: 20 to 200mm (6mm tube), 20-500mm (8mm tube)
- Mounting thread diameter: 10 to 60mm
- Material of protection tube: stainless steel

Vibration location class:

- B for protective fitting tube diameter 6mm and protective fitting tube length max.100mm
- B for protective fitting tube diameter 8mm and protective fitting tube length max.250mm
- A for all others.

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and Monitoring Systems.

The type approval is valid for sensor types with the type key addition "880" (type addition DNV-GL) indicated by the type key code.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard.

Type Approval documentation

Test reports:

Jumo Test Protokoll No. 299.3 of 10.04.2000, RMS No. 02-10/98;
Additional test report EW-1472 902044/20/21 Dry Heat Test, dated 2020-02-12;
Technical data and drawing JUMO 90204420A44Z002K000, rev.01, dated 2021-11-16;
EW-1472 Einflussanalyse 902044/20/21 Betrachtung Gewindegrößen Prozessanschluss;
EW-1472 Einflussanalyse 902044/20/21 Erweiterung Sensortypen Pt500 und Pt1000;
EW-1472 Einflussanalyse 902044/20/21 Erweiterung der Toleranzklassen KI.A und AA;
EW-5965 Einflussanalyse: Einfluss des Bajonetts und der Feder;
Add 902815, 902190:
Drawing 90281500A44Z001K000, Rev.06, dated 2022-02-10;
Drawing 90219000A44Z001K000, Rev.06, dated 2022-02-18;
Drawing 90215000A44Z001K000, Rev.02. dated 2025-01-22;
Drawing 90204420A44Z002K000, Rev.02. dated 2022-02-10;
Additional document package filed under 262.1-033287-2, Techdoc. No.7;
Additional Test Report EW-2232.60068-2-30.EUT4.1.0;
Type Approval Assessment Report issued at Augsburg on 2025-01-06.

Tests carried out

Applicable tests according to DNV CG-0339, August 2021.

Marking of product

Maker, type designation, F-number.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE