



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001VR
Revision No:
4

This is to certify:

That the Level Switches and Level Transmitters

with type designation(s)

JUMO NESOS R01 LS, JUMO NESOS R02 LS, JUMO NESOS R03 LS, JUMO NESOS R20 LT, JUMO NESOS R40 LSH

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
DNV GL 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.

Type	Temperature	Humidity	Vibration	EMC	Enclosure
JUMO NESOS R01 LS	D	B	A	N/A	B, IP6x *)
JUMO NESOS R02 LS	D	B	A	N/A	B, IP6x *)
JUMO NESOS R03 LS	D	B	B	N/A	B, IP6x *)
JUMO NESOS R20 LT	D	B	A	A	B, IP6x *)
JUMO NESOS R40 LSH	D	B	A	N/A	B, IP6x *)

Issued at **Hamburg** on **2021-11-29**

for **DNV**

This Certificate is valid until **2023-05-27**.

DNV local station: **Augsburg**

Approval Engineer: **Jens Dietrich**

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Joannis Papanuskas
Head of Section

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 300,000 USD.



Form code: TA 251

Revision: 2021-03

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JUMO NESOS R01 LS (408301-062-xxx, 408301-662-xxx, 408301-962-xxx):

Float level switch - miniature type
Switch function (dry contact): SPST-NO/NC, SPDT-CO, bistable
Switching voltage (max.): AC/DC 230V (NO)
Switching power (max.): 100VA/100W
Switching current (max.): 1,5A
Switching point accuracy: ± 2 mm
Mounting orientation (vertical): $\pm 30^\circ$
Optional temperature sensor Pt100/Pt1000, measuring range -40 ... 150 °C
Floating element material: Stainless steel AISI316 / Titanium;
Guide tube: Stainless steel AISI316, length: 30...500mm.
Connection options:
-Cable: PVC, PUR, Silicone
-DIN plug connector, PBT-GF30
-M12-plug, PBT-GF30
-Connector head, coated aluminium
-Connector housing, coated Aluminium.
) Degree of protection (depending on electric connection): IP65...IP67, IP68(1,2m, 120h)
Ambient temperature range depending on connector/cable,
Process medium temperature: -40°C...+150°C (-52...+240°C, on demand)

JUMO NESOS R02 LS (408302-062-xxx, 408302-662-xxx, 408302-962-xxx):

Float level switch – standard type
Switch function (dry contact): SPST-NO/NC, SPDT-CO, bistable
Switching voltage (max.): AC/DC 230V
Switching power (max.): 100VA/100W
Switching current (max.): 1,5A
Switching point accuracy: ± 2 mm
Mounting orientation (vertical): $\pm 30^\circ$
Optional temperature sensor Pt100/Pt1000: Measuring range -40...150°C or temperature switch:
NC, max. 2,5A, AC230V, cos phi 0,95 [0,6], 2,5A [1,6A].
Floating elements: Stainless steel AISI316 / Titanium
Guide tube: Stainless steel AISI316, length: 100...4000mm (see application/limitation).
Connection options:
-Cable: PVC, PUR, Silicone
-DIN plug connector, PBT-GF30
-M12-plug, PBT-GF30
-Connector head, coated aluminium
-Connector housing, coated Aluminium.
) Degree of protection (depending on electric connection): IP65...IP67, IP68(1,2m, 120h)
Ambient temperature range depending on connector/cable,
Process medium temperature: -40°C...+150°C (-52...+240°C, on demand)

JUMO NESOS R03 LS (408303-062-xxx):

Float level switch with chamber
Switch function (dry contact): SPST-NO/NC SPDT-CO
Switching voltage (max.): AC/DC 230V
Switching power (max.): 100VA/100W
Switching current (max.): 1,0A
Switching point accuracy: ± 2 mm
Mounting orientation (vertical): $\pm 30^\circ$
Pressure range (nominal pressure) -1...+6bar.
Floating element material: Stainless steel AISI316 / Titanium;
Guide tube: Stainless steel AISI316. Pipe coupling: Zinc coated steel,
Housing/connection box material: Aluminium (coated).
) Degree of protection: IP66
Ambient temperature range: -30°C...+95°C (Connector Housing),
Process medium temperature: -30°C...+150°C.

JUMO NESOS R20 LT (408320-062-xxx, 408320-662-xxx, 408320-962-xxx):

Float level transmitter
Output signal: 4...20mA or resistance (Ohms)
Mounting orientation (vertical): $\pm 30^\circ$
Optional temperature sensor Pt100/Pt1000: Measuring range -40...150°C or temperature switch NC.

Floating elements: Stainless steel AISI316 / Titanium
Guide tube: Stainless steel AISI316 type, length 100...4200mm (see application limitation)
Connection options:
-Cable: PVC, PUR, Silicone
-DIN plug connector, PBT-GF30
-M12-plug, PBT-GF30
-Connector head, coated aluminium
-Connector housing, coated Aluminium.
Power Supply: 24 V DC (output signal 4 ... 20 mA); <=33 V AC or <= 70 V DC (output signal resistance); <= 60 V DC (output signal temperature switch)
) Degree of protection (depending on electric connection): IP65...IP67, IP68(1,2m, 120h)
Ambient temperature range depending on connector/cable,
Process medium temperature: -40 ... 150 °C (-52 ... 180 °C, on demand).

JUMO NESOS R40 LSH (408340-062-xxx, 408340-662-xxx, 408340-962-xxx):

Float level switch – horizontal type
Switch function (dry contact): 10 SPST-NO, 12 SPDT-CO
Switching voltage (max.): AC/DC 230V
Switching power (max.): 100VA/100W (SPST-NO), 60VA/60W (SPDT-CO)
Switching current (max.): 1,0A
Mounting angle: ±30°
Optional temperature sensor Pt100/Pt1000: Measuring range -40...150°C or temperature switch:
NC, max. 2,5A, AC230V, cos phi 0,95 [0,6], 2,5A [1,6A].
Floating elements: Stainless steel AISI316
Guide tube: Stainless steel AISI316, length: 100...1000mm
Connection options:
-Cable: PVC, PUR, Silicone
-PBT-GF30
-Connecting head (stainless steel)
-Connecting housing (coated aluminium)
) Degree of protection (depending on electric connection): IP65...IP67, IP68(1,2m, 120h)

Application/Limitation

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 requirements in DNV RU SHIP Pt.4, Ch.9 and DNV Pt.4, Ch.6.

Type 408302 and 408320 guide tube lengths >2500mm require additional fixtures.
Type 408301 guide tube lengths >160mm require additional fixtures.

Type Approval documentation

408301:

Data sheet JUMO NESOS R01 LS, 40830100T10Z000K000, V5.00/DE/00699315/2019-10-08
JUMO Test Protocols, project no. 40.0045.E0.R01 LS

408302:

Data sheet JUMO NESOS R01 LS, 40830200T10Z000K000, V4.00/DE/00700191/2019-10-08;
JUMO Test Protocols, project no. 40.0045.E0.R02 LS;
EDAK 50910-0003-01, dated 2018-12-10; EDAK 50910-0002-02, dated 2018-10-25.

408303:

Data sheet JUMO NESOS R03 LS, 40830300T10Z000K000, V2.00/DE/00700200/2019-07-01;
Operating instruction: JUMO 40830100T90Z000K000, DE/00699188;
Test reports: I2PS, No2018-0059703, dated 2018-05-17; I2PS No2018-0058204, dated 2018-05-24;
I2PS No2018-0072306, dated 2018-06-21. Test protocol JUMO ASTR-AZ7FXQ, dated 2018-05-18.
Additional Test Report JUMO R40 LSH: EDAG PB-50910-0010-04, dated 2021-02-09.

408320:

Data sheet JUMO NESOS R20 LT, 408320000T10Z000K000, V3.00/DE/00700186/2019-10-09
JUMO Test Protocols, project 40.0045.E0.R20 LT.
Data sheet JUMO NESOS R40 LSH, 40834000T10Z000K000, V3.00/DE/00741371/2021-02-11.
JUMO NESOS Operating Manual 40830100T90Z000K000 V5.00/DE-EN-FR-ES/00699188/2019-10-09.
TA assessment report, DNV GL Magdeburg, 2018-05-16.

Tests carried out

For level switches: Applicable tests according to class guideline DNV CG-0339, Aug. 2021,
For level transmitter: Applicable tests according to class guideline DNV GL CG-0339, Nov. 2016.

Marking of product

Manufacturer, type designation, serial 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 this certificate.

END OF CERTIFICATE