

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Temperature Switch**

with type designation(s)

471.2323.xxx, 471.2331.xxx, 471.2353.xxx, 472.1223.xxx, 472.1231.xxx, 472.1253.xxx

Issued to

Trafag AG**Bubikon, ZH, Switzerland**

is found to comply with

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 GL.****Location classess:**

| | |
|--------------------|----------|
| Temperature | B |
| Humidity | B |
| Vibration | B |
| EMC | B |
| Enclosure | B |

Issued at **Hamburg** on **2018-11-07**for **DNV GL**This Certificate is valid until **2020-11-06**.DNV GL local station: **Augsburg**Approval Engineer: **Dariusz Lesniewski**

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.



Product description

Thermostat (temperature range: +20 °C to +110 °C):
Type 471.2323.322: sensor length 128 mm, sensor diameter 7 mm
Type 471.2323.132: sensor length 89 mm, sensor diameter 9 mm
Type 471.2323.142: sensor length 42 mm, sensor diameter 12 mm
Temperature Switch with Locking (temperature range: +20 °C to +110 °C):
Type 472.12xx.xxx: the same specification as for thermostat
Time constant: 20 s with protection pocket and heat compound

Thermostat (temperature range: +20 °C to +150 °C):
Type 471.2331.322: sensor length 128 mm, sensor diameter 7 mm
Type 471.2331.132: sensor length 89 mm, sensor diameter 9 mm
Type 471.2331.142: sensor length 42 mm, sensor diameter 12 mm
Temperature Switch with Locking (temperature range: +20 °C to +110 °C):
Type 472.12xx.xxx: the same specification as for thermostat
Time constant: 35 s with protection pocket and heat compound

Thermostat (temperature range: +40 °C to +300 °C)
Type: 471.2353.122: sensor length 88 mm, sensor diameter 7 mm
Type: 471.2353.132: sensor length 68 mm, sensor diameter 9 mm
Type: 471.2353.142: sensor length 28 mm, sensor diameter 12 mm
Temperature Switch with Locking (temperature range: +40 °C to +300 °C)
Type: 472.12xx.xxx: the same specification as for thermostat
Time constant: 12 s without protection pocket
Time constant: 32 s with protection pocket

Type 47x.xxxx.K: sensor with direct mounted protection tube
Type 47x.xxxx.B: sensor with capillary tube, length 1m, 2m or 3m

Output: 1 c/o – contact
Rating: 250 V AC, 15 A – resistive load
Degree of protection: IP 65

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, 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 GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Data sheet: H72111m
Test report: V-620
Test report: V-18062, 2018-11-01
Drawings: R 93159, R 93659, R 93160, R 93176, R 93177

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number

Job Id: **262.1-029338-1**
Certificate No: **TAA000021S**

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE