DNV·GL

Certificate No:
TAA0000243

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Transmitter

with type designation(s)
TST 16.0, TST-SMH 16.0

Issued to
TIVAL Sensors GmbH
Wuppertal, Germany

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.

Temperature	**D**
Humidity	**B**
Vibration	**B/C**
EMC	**B**
Enclosure	**Required ingress protection according IEC standard 60529 shall be provided upon installation on board (see limitation on page 2)**

Issued at **Hamburg** on **2018-12-12**
This Certificate is valid until **2023-12-11**.
DNV GL local station: **Essen**

Approval Engineer: **Didier Girardin**

for **DNV GL**

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.

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Job Id: **262.1-029679-1**
Certificate No: **TAA0000243**

Product description

TIVAL Sensors Electronic Pressure Transmitter

Type	**Max. Pressure Span**
TST 16.0	1000 bar
TST-SMH 16.0	5000 bar

Output signals:	4-20 mA
Response time	[10-90%]: =1 ms
Accuracy:	0.5% F.S.
Working temperature range (media):	-40 ... 125°C / -40 ... 257°F
Working temperature range (ambient):	-40 ... 105°C / -40 ... 221°F

Housing, pressure cells and electronics modular design combining:

Pressure sensor cells

- Stainless steel membrane
- Silicon sensor with oil filled stainless steel membrane
- Titanium alloy membrane

Sensor electronics for different output signals and different EMC protection:

- Two wire current output with additional EMC protection
- Simple two wire current output for minimal supply voltage 9 V
- Ratiometric voltage output (output proportional to supply) for regulated 5 V supply voltage
- Non ratiometric voltage output

Sensor housings

Art. N°	**Description**
Article 805161-H	with 22 mm diameter stainless steel housing with M12 Binder 763 connector with water diving sealed air filter tested for IP66, IP67, IP6K9K
Article 811159	with 22 mm diameter stainless steel housing with mounted DIN EN 175 301-803 connector sealed by the cable connector with vented cable tested for IP65

Application/Limitation

- The Type Approval covers hardware listed under type designation.
- Required ingress protection according IEC standard 60529 shall be provided upon installation on board. Ingress protection according selected housing described under product description

Type Approval documentation

Hidden

Marking of product

The products to be marked with:
- manufacturer name
- model name
- unique serial number
- certificate 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, components and/or materials. The main elements of the assessment are:

- Ensure that basis certificate (MRA000001V) is valid
- Inspection of samples
- Review of inspection routines, including test records from product sample tests and control routines
- Review of possible changes in design and make sure that such changes do not affect the type approval given
- Ensuring traceability between 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