DNV·GL

Certificate No:
TAA000025S

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Transmitter

with type designation(s)
MBS 2100/2150, 3100/3150, 3300/3350

Issued to
Danfoss A/S
Nordborg, Syddanmark, Denmark

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 classes:

Temperature	**D**
Humidity	**B**
Vibration	**5 Hz to 30 Hz amplitude = 5.5 mm,** **20 Hz to 2000 Hz acceleration = 20 g**
EMC	**B**
Enclosure	**B**

Issued at **Høvik** on **2019-02-08**

This Certificate is valid until **2024-02-10**.
DNV GL local station: **Copenhagen**

Approval Engineer: **Nils Jarem**

for **DNV GL**
Digitally Signed By: Alonso Pontes, Marta
Location: DNV GL Høvik, Norway

Marta Alonso Pontes
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.

Job Id: **262.1-030401-1**
Certificate No: **TAA000025S**

Product description

Pressure transmitters MBS 2100/2150, 3100/3150, 3300/3350

MBS xx50:	Versions with integrated pulse-snubber
Power supply:	24V DC (nom.) 5V DC (nom.) for MBS 21xx
Output signal:	4-20 mA within range, increasing to 28 mA by over pressure Various ranges from 0V DC up to 10V DC 10-90% of supply (ratiometric) for MBS 21xx
Pressure ranges:	0-1 bar to 0-600 bar
Operating temperature:	MBS 31xx up to 85°C MBS 33xx up to 100°C/125°C MBS 21xx up to 125°C
Wetted parts:	stainless steel AISI 316 L
Enclosure material:	stainless steel AISI 316 L
Pressure connection:	various thread types
Pressure reference:	absolute, relative gauge
Electrical connection:	DT04-P4-CE04, and others. Refer to the datasheets.

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 sheets:	IC.PD.P20.2O.02 IC.PD.P21.O8.02
Test reports:	TR 060GPM970929(01), (02) PM941208(01) TR 060G-97/02/24 Technical Report 2008-9027 117-33523-7 dated 2018-02-19, Flame retardant test.
Drawings:	060R3050, 060C0337, 060C0340

Type approval renewal assessment report for 11 288 - 98 HH, Tianjin 2019-01-31.

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
- power supply ratings

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