DNV·GL

Certificate No:
TAA00002CT

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gas Detectors for Exhaust Gas Emissions

with type designation(s)
Marine Emission Sensor: MES 1001

Issued to
Danfoss Ixa A/S
Vejle, 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	**B**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B / IP65**

Issued at **Høvik** on **2019-08-27**
This Certificate is valid until **2024-08-26**.
DNV GL local station: **Denmark CMC**

Approval Engineer: **Nils Jarem**

for **DNV GL**

Trond Sjåvåg
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: **262.1-031473-1**
Certificate No: **TAA00002CT**

Product description

Marine Emission Sensor MES 1001

Supported gases:	Accuracy (when calibrated):
NO 0 - 1500 [ppm]	±2% of reading or ±0.3% fs, whichever is greatest
NO_2 0 - 500 [ppm]	±2% of reading or ±5 ppm, whichever is greatest
SO_2 0 - 1000 [ppm]	±2% of reading or ±0.3% fs, whichever is greatest
NH_3 0 - 100 [ppm]	±2% of reading or ±1 ppm, whichever is greatest

Technology:	UV absorption spectroscopy
Mounting flange:	circular, bolted connection - DIN 2633, NT 16
Power supply:	24 VDC +/-25%
Inputs / Outputs:	
4 x analogue output:	4 - 20 mA
Digital inputs:	2 (relay controlled)
Digital outputs:	2 (relay controlled)
Communication interfaces:	Modbus TCP/IP, RS-422
Local Control Panel:	display, menu keys, navigation keys, operational key, status indication lights
Software version:	Refer to 100591-REP

Place of manufacture

BB Electronics
Ane Staunings Vej 21
8700 Horsens, Denmark

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

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

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