

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Gas Detector**

with type designation(s)

**NOx Analyzer for Ships MEXA-820NOx, Receiver set, Guide probe set and Sensor**

Issued to

**HORIBA, Ltd. Head Office  
Kyoto, Japan**

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:**

| Type                       | Temperature | Humidity | Vibration | EMC | Enclosure |
|----------------------------|-------------|----------|-----------|-----|-----------|
| Receiver set               | A           | B        | A         | A   | A / IP20  |
| Guide probe set and Sensor | A           | B        | B         | A   | A / IP20  |

Issued at **Høvik** on **2017-06-15**This Certificate is valid until **2022-06-14**.for **DNV GL**DNV GL local station: **Kobe**Approval Engineer: **Ståle Sneen**

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**Odd Magne Nesvåg**  
**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

NO<sub>x</sub> Analyzer for Ships MEXA-820NO<sub>x</sub> for use with a selective catalytic reduction (SCR) control device<sup>1</sup>.

MEXA-820NO<sub>x</sub> type 3200652046 (short) comprising Receiver set, Guide probe set S and Sensor S  
MEXA-820NO<sub>x</sub> type 3200652043 (long) comprising Receiver set, Guide probe set L and Sensor L  
Receiver set: Type 3200652044  
Guide probe set S: Type 3200652059  
Guide probe set L: Type 3200652060  
Sensor S: Type 3200652082  
Sensor L: Type 3200652083

The receiver set is intended installed in a control room. Guide probe set and sensor are installed in exhaust pipe. Receiver and sensor interconnects through an 8-core shielded cable.

### Technical data from maker

Measurement items: NO<sub>x</sub>, O<sub>2</sub>  
Measurement range: NO<sub>x</sub>: 0-2000ppm, O<sub>2</sub>: 0-25%vol  
Measurement principle: Limiting current type zirconia sensor  
Power supply: 24 Vdc  
Power consumption: ~20W. Supply should be rated ~50W.  
Analog output: 4-20mA max.600Ω loading resistance, NO<sub>x</sub> or O<sub>2</sub> measurement values  
Contact output: Three outputs (DC30V, 1A isolation);  
(1) Sensor maintenance, (2) Upper/Lower threshold, (3) Analyzer fault  
Communication: RS-485 (for connection to host or another receiver)  
Measurement accuracy: NO<sub>x</sub>: ±40ppm, O<sub>2</sub>: ±0.4%  
Response time (T<sub>90</sub>): Within 10 seconds  
Start up time: ~3 minutes  
Warranty of sensors: Within 4000 hours in operation

1) SCR control device is not covered by this type approval

## Place of manufacture

HORIBA, Ltd. Biwako Factory  
1-15-1, Noka, Otsu City, Shiga Prefecture  
520-0102 Japan

## 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.

## Application/Limitation

The Type Approval covers DNV GL rules for environmental conditions. Compliance with revised MARPOL Annex VI and NO<sub>x</sub> Technical Code 2008 has not been considered.

The equipment has been tested and approved for power supply variations for equipment connected to D.C. systems (±10% variation, 5% cyclic variation, 10% ripple). The equipment is not approved for connection to battery sources. 24Vdc shall be supplied by an approved power supply, or by a D.C. distribution system not backed up by-, or otherwise connected to, a battery power source.

## **Type Approval documentation**

### **Tests carried out**

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.  
Performance test for the sensor temperature range 40°C to 500°C.

### **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