DNV·GL

Certificate No:
TAA00001ZN

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gas Detector

with type designation(s)
ST450EC

Issued to
Buveco Gasdetection B.V.
Bleiswijk, Zuid-Holland, Netherlands

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	**C**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**C/IP66**

Issued at **Høvik** on **2018-08-20**
This Certificate is valid until **2023-08-19**.
DNV GL local station: **Rotterdam, Offshore & Newbuilding**

Approval Engineer: **Nils Jarem**

for **DNV GL**

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.

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Job Id: **262.1-028184-1**
Certificate No: **TAA00001ZN**

Product description

Gas detector ST450EC

Gas type	Oxygen (O_2), and Hydrogen Sulfide (H_2S)
Sensor type	Electrochemical sensor (2 or 3 electrodes)
Range	Oxygen (O_2), 0-25 Vol.%
	Hydrogen sulfide (H_2S), 0-30 / -50 / -100 ppm
Display	Digital graphic display
Status LED display	Green: OK, Red: Alarm, Yellow: SF (System Failure), Blue: User menu active
Power supply	Nominal 24 Vdc (max. 25 mA)
Outputs	4-20 mA, RS485 Modbus RTU (half-duplex)
	2 mA System Failure, >20 mA over range
Enclosure	Standard Aluminium, optional 316 SS (gas sensor standard 316 SS)

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 units are to be installed connected to a power supply of approved type.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Performance tests according to EN 50104: 2010 (O_2), EN 45511-1: 2015 and EN 45511-3: 2015 (H_2S).

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