

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Gas Detector**with type designation(s)  
**S5000 Gas Monitor**

Issued to

**General Monitors Inc**  
**Lake Forest, CA, USA**

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; Tested to -55°C**  
**Humidity B**  
**Vibration A**  
**EMC B**  
**Enclosure C/IP66;**  
**B/IP65 for Digital Sensor**Issued at **Høvik** on **2018-08-16**This Certificate is valid until **2023-08-15**.DNV GL local station: **Long Beach**Approval Engineer: **Nils Jarem**for **DNV GL**

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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.



Job Id: **262.1-028258-1**  
Certificate No: **TAA00001ZA**

## **Product description**

S5000 Gas Monitor for detection of combustible gases.

S5000 Gas Monitor consisting of S5000 transmitter, S5000 Junction Box, IR400 gas sensor and Digital Sensor.

Passive gas sensors with part numbers 11159-1, 11159-2, 11159-8, 11159-1L, 11159-2L and 11159-8L can also be connected.

The S5000 Gas Monitor supports two Digital Sensors installed either integral to the S5000 transmitter or remotely using the S5000 Junction Box, one IR400 point IR detector and one Digital Sensor installed either integral to the S5000 transmitter or remotely using the S5000 Junction Box, or one passive sensor, combustible catalytic type either integral to the S5000 transmitter or remotely using the S5000 Junction Box.

The S5000 Gas Monitor generates two independent analog outputs; one for each sensor connected to the transmitter. The analog output associated with Sensor 1 also has the digital HART (Highway Addressable Remote Transducer) communication superimposed on the analog signal. If two sensors are connected, the digital HART communication carries information for both sensors. S5000 also has Modbus and Bluetooth communication options. Bluetooth is used for status inquiry and setup.

## **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**

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.

Applicable tests according to EN 60079-29-1:2007.

### **Marking of product**

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

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### **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