DNV·GL

Certificate No:
TAA00002T5

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Automatic Gas Detection System

with type designation(s)
SSA-20; FMS-40

Issued to
Guangzhou Fokstone Automation Company Limited
Guangzhou, China

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	**A**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**Required protection according to relevant rules shall be provided upon installation on board**

Issued at **Høvik** on **2020-07-30**
This Certificate is valid until **2025-07-29**.
DNV GL local station: **China South NB**

for **DNV GL**

Approval Engineer: **Nils Jarem**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Product description

Gas Sampling System SSA-20

SSA-20 is a sequential scanning gas detection system, designed for detection of gas leakages in areas and compartments that should normally be gas free.
Air is pumped from the various locations by vacuum pumps, into a cabinet containing the relevant gas sensors. Magnetic valves direct the air samples through the gas sensors in sequence.
SSA-20 is controlled by a PLC with touchscreen Operator Panel.

Component	Model
Operator Panels	Siemens TP Comfort series
Flammable Gas Detectors	Honeywell Optima plus IR Honeywell XCD series Crowcon IR Max
Oxygen Gas Detector	Honeywell XCD series
PLC CPU	Siemens S7-1200
Remote IO	Siemens ET 200SP
Main pump	Thomas VTE3
Sample pump	Thomas 7006AC

Software: SSA-20_SW.1.01, dated 2017-05-16

Gas Detection System FMS-40

FMS-40 is a gas detection system with remote mounted gas sensors of various types, including brackets and flanges for mounting.
FMS-40 is controlled by a PLC with touchscreen Operator Panel.

Component	Model
Operator Panels	Siemens TP Comfort series
Flammable Gas Detectors	Honeywell Optima plus IR Honeywell XCD series Crowcon IR Max
Oxygen Gas Detector	Honeywell XCD series
PLC CPU	Siemens S7-1200
Remote IO	Siemens ET 200SP

Software: FMS-40_SW.1.01, dated 2017-12-15

Application/Limitation

The Type Approval covers hardware and software listed under Product description.

The following documentation of the actual application is to be submitted for approval in each case:
- Reference to this type approval certificate.
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- Arrangement drawings showing location of suction points/detectors and central units, including external piping design data
- Gas detectors specifications
- Instruction manual covering each specific installation to be available on board
- Functional description (*)
- Test program for certification (*)

(*) If certification requirement applies, see under "Product Certificate" below.

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Product certificate
With exception of the system type stated below, each delivery of the AUTOMATIC GAS DETECTION SYSTEM is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

The systems for detection and alarm only, (i.e. with no automatic safety actions), are exempted from requirement for product certification provided the delivery is covered by this type approval certificate.

Application software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes are to be forwarded to DNV GL for evaluation and approval before implemented on board.

Flammable Gas Detectors and Oxygen Gas Detectors are not covered by this certificate.

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, December 2019.
Assessments according to EN 60079-29-1 (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