



Marine & Offshore
Division

Certificate number: 44136/A0 BV

File number: AP 4677

Product code: 3820I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Opsis AB
FURULUND - SWEDEN

for the type of product

GAS DETECTION AND ALARM SYSTEMS
Gas Monitoring System M800

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships.
MEPC.184(59), Ch.6

EC Code: 31/33

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 29 Apr 2021

For BUREAU VERITAS,

At BV GOTHENBURG, on 29 Apr 2016,

Magne MOLLER



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

- Product model or type designation :
M800

- Product description:

Gas Monitoring System measures SO₂ and CO₂ concentrations using UV and IR absorption.

The M800 gas analyser system comprises the following parts:

Item Description	Designation	Technical Specifications
Cabinet	AC180M AC181M	Voltage supply: 400V(3 phases)/230/115V(single phase)
Power Supply	PS150-01M	Voltage supply: 230V
Analyser	AR600M AR620M (AR602Z/N) AR650M (AR650/N)	One UV detector One IR detector and one UV detector One IR detector
Optical Fibre Cable	OF60R OF100B	Used when monitoring gases such as NO and NH ₃ Optical fibres are used together with AR550 & AR650 analysers
Emitter/Receiver	ER060M *) ER062M *)	for Applications with One Analyser for Applications with Two Analysers

*AR602Z/N and AR650/N are land based designation

2. DOCUMENTS AND DRAWINGS:

DNV.GL:

- Confirmation of Compliance Res. MEPC.184(59) Ch.6 Rev.0, dated 2014-10-10.

Opsis AB:

- SO 2 Scrubber Control Ref.: A41, dated Apr 2015.
- Installation & User's Guide Release 1, dated Feb 2006.
- M800 System Quick Guide Vers. 1.01, dated Dec. 2003.
- Data Sheet AR600 Series Ref.: P2 2012 09, dated Sep 2012.
- Data Sheet OF060/OF100 Optic Cable Ref.: P9 2012 09, dated Sep 2012.
- Data Sheet ER060 Series Emitter and Receiver Sets Ref.: P3 2012 09, dated Sep 2012.
- Data Sheet PS150 Power Supply Unit Ref.: P8 2012 09, dated Sep 2012.
- Data Sheet AC180/AC181 Air-Conditioned Housing Ref.: P20 2012 09, dated Sep 2012.

3. TEST REPORTS:

bertrandt:

- Vibration test No.: 10146028, dated 11.11.2011.

serco GmbH:

- Electromagnetic Emission and Immunity test No.: 0048/11, dated 29.06.2011

TÜV:

- Report on the laboratory investigations for type approval testing No.: 936/21216959/Y, dated 07.02.2012.

Opsis:

-Report on NO_x Monitoring Equivalence Tests Ref.: OPSIS M800 NO_x test report, dated Sep 1, 2015.

4. APPLICATION / LIMITATION:

4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.

4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31** (Control Cabinet) & **EC Code: 33** (Light source/Detection)

4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones.

4.5 - Each application and configuration is to be submitted to the Society's examination prior to fitting on board.

4.6 - The equipment, once installed on board ship, is to be tested in accordance with the above referred Regulations under the supervision of a Society's Surveyor.

4.7 - Compliance with MARPOL Annex VI and/or NO_x Technical Code 2008 has not been considered.

4.8 - Fiber optic cable are used together with the Opsis AR550 and AR650 analysers.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **Opsis AB** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.3 - BV product certificate is required.

6. MARKING OF PRODUCT:

- Maker's name or trade mark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.
- \ or @ conformity marking, as relevant.

7. OTHERS:

This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that **Opsis AB - Sweden** will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

*** END OF CERTIFICATE ***