



CERTIFICATE NUMBER
17-LD1620523-PDA

DATE
29 Mar 2017

ABS TECHNICAL OFFICE
London Engineering Department

CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of

GREEN INSTRUMENTS A/S

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Optical Smoke Detector**

Model: **G16**

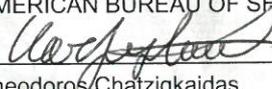
This Product Design Assessment (PDA) Certificate 17-LD1620523-PDA, dated 29/Mar/2017 remains valid until 28/Mar/2022 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING


Theodoros Chatzidakis
Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

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Tier: 3 - Type Approved, unit certification not required TC

Product: Optical Smoke Detector

Model: G16

Intended Service:

ABS Classed Vessels and Offshore Installations in accordance with the listed ABS Rules and International Standards.

Description:

The G16 Smoke Density Monitor is designed for continuous emission monitoring in smokestacks and exhaust gas ducts on land and marine based installation. The system is used to determine smoke and dust emission after diesel engines, boilers and incinerators in order to provide precise combustion data for legal and economical sound operation.

Rating:

Input Power: 24VDC, 2A (optional 100-240VAC, 50/60Hz, 1.4A)

Ambient Temp: 0C - +55C

Ingress Protection: IP 66

Service Restriction:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. Equipment is not intended to be installed in a hazardous area. Not intended for fire detection system applications.

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:

Drawing No. 00014, WELDING SOCKET, Revision: 0, Pages: 1

Drawing No. 02825, ALIGNMENT BRACKET, Revision: 0, Pages: 1

Drawing No. 02860, TRANSCIEVER HOUSE, Revision: 0, Pages: 1

Drawing No. 02879 G16 02880 G26, G16 SMOKE DENSITY MONITOR. G26 AMBIENT OIL MIST DETECTOR, Revision: 2, Pages: 1

Drawing No. 02893, ENCLOSURE FOR JUNCTION BOX, Revision: 0, Pages: 1

Drawing No. 02894, CONTROL AND MONITORING UNIT, Revision: 0, Pages: 1

Drawing No. About our application v1, PRODUCT TYPE APPROVAL BRIEF DESCRIPTION, Revision: 0, Pages: 1

Drawing No. Certificate - ISO9001-2016, CERTIFICATTION, Revision: 0, Pages: 1

Drawing No. Correspondence, INCOMING EMAIL - GREEN INSTRUMENTS - DATED 14-2-2017, Revision: 0, Pages: 1

Drawing No. DNV GL TA for G16 and G26 public, TYPE APPROVAL CERTIFICATE, Revision: 0, Pages: 1

Drawing No. Environmental Test report 6P02723-1, ENVIRONMENTAL TEST REPORT, 07-14-2016, Revision: 0, Pages: 1

Drawing No. G16 Instruction Manual, G16 INSTRUCTION MANUAL, Revision: 0, Pages: 1

Drawing No. G16-G26, G16/G26 SW DESCRIPTION, Revision: 0, Pages: 1

Drawing No. G26 Instruction Manual, G26 INSTRUCTION MANUAL, Revision: 0, Pages: 1

Drawing No. Performance Test Report for G16-G26 - with DNV GL approval, PERFORMANCE TEST REPORT FOR G16-G26, 01-December-2016, Revision: 0, Pages: 1

Drawing No. Performance Test result table 1 and 2, PERFORMANCE TEST RESULT TABLE 1, Revision: 0, December 2016, Pages: 1

Drawing No. Request-Type-Approval-ABS by GI, TYPE APPROVAL REQUEST FORM, Revision: 0, Pages: 1

Terms of Validity:

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Tier: 3 - Type Approved, unit certification not required

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STANDARDS

ABS Rules:

- Steel Vessels (2017): 1-1-4/7.7, 1-1-Appendix 3 & A4; 4-1-1/7.15, 4-9-8/3, 4-9-8/7, 4-9-8/13, 4-9-8/ Table 1 and 4-9-8/ Table 2
- Steel Vessels Under 90 Meters (295 Feet) in Length (2017): 1-1-4/7.7, 1-1-Appendix 3 & A4; 4-1-1/37, 4-7-2 /Table 1, 4-7-4/3.7, 4-7-4/3.9;
- Offshore Support Vessels (2017): 1-1-4/7.7, 1-1-Appendix 3 & A4; 4-1-1/7.15, 4-9-8/3, 4-9-8/7, 4-9-8/13, 4-9-8/ Table 1 and 4-9-8/ Table 2
- Facilities on Offshore Installations (2016): 1-1-4/9.7, 1-1-Appendix 2 & A3;
- Mobile Offshore Drilling Units (2017): 1-1-4/9.7, 1-1-Appendix 3 & A4; 6-1-1/9, 6-1-1/13; 4-1-1/7.9, 4-3-1/9, 4-3-1/11, 4-3-1/15, 4-3-1/17
- Steel Vessels for Service on Rivers and Intracoastal Waterways (2017): 1-1-4/7.7, 1-1-Appendix 3 & A4; 4-1-1/21, 4-5-1/9, 4-5-1/13, 4-5-1/17, 4-5-1/19
- High Speed Crafts (2017): 1-1-4/11.9, 1-1-Appendix 2 & A3; 4-1-1/37, 4-6-1/9, 4-6-1/11, 4-6-1/15, 4-6-1/17, 4-7-9/15, 4-7-9/ Table 9 and 4-7-9/ Table 10.
- Steel Barge Rules (2017): 1-1-4/7.7, 1-1-Appendix 3 & A4; 4-1-3/5.7.

National:
NA

International:
IACS UR E10, Rev.6:2014, ASTM D6216-12: 2012

Government:
NA

EUMED:
NA

OTHERS:
NA

TC