



Marine & Offshore
Division

Certificate number: 22859/B0 BV

File number: AP 4004

Product code: 3795I

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

Green Instruments A/S

Brønderslev - DENMARK

for the type of product

OXYGEN GAS DETECTORS / ANALYSERS

Analysers dedicated to the measurement of Oxygen in Nitrogen or Flue Gas based Inert Gas or in the atmosphere in engine room compartments or rooms for inert gas system or accommodation area.

Type: G36 and G36p

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.
EN 50104 (2010)

EC Code: 21B / 31B

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: 16 Jun 2020

For BUREAU VERITAS,

At BV FREDERICIA, on 16 Jun 2015,

Jesper Jensen



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.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=rjhxiaauj>

BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

G36 and **G36p** are Oxygen Analysers based on a Heated Zirconia Sensor intended to measure the concentration of Oxygen in Nitrogen or Flue gas based Inert gas or in the atmosphere in engine room compartments or rooms for inert gas system or accommodation area.

G36 Systems comprise the following parts:

Main Unit / Analyser: Measuring Range: 0.0 to 20.9 % Oxygen
 Ambient Temperature: -15°C to 55°C (G36), 70°C (G36p)
 Power Supply:
 G36a: 90/230 VAC - 50/60 Hz, G36d: 24 VDC
 G36p: 24 VDC (Flush mounting)
 Analogue Output: 2 x 4-20 mA
 Output Relay: 4 x Volt Free Contact Relay (250 VAC - 5A)
 Alarm: High, High High O2 level (Free Configurable) and System-Fail
 Interface: Touch Screen 71x39 mm with trend graph display
 G36a and G36d: IP67
 G36p: IP55 (if panel mounted)

Oxygen Sensor: Heated Zirconia Sensor, mounted in sampling line
(SEN1 and SEN9 parts)

Software Release: V2.0x

2. DOCUMENTS AND DRAWINGS :

GREEN Instruments:

Manuals Oxygen Analyser : G36 No. 01245 and G36p No. 01381

Electronic Drawings:

P0744 (5 pages) Rev. 1.1 dated March 26, 2008
 P0744B (5 pages) Rev. 2 dated April 28, 2008
 P0745 Rev. 1 dated February 14, 2008
 P0901 Rev. 1B dated March 26, 2009
 P0902 Rev. A2 dated March 02, 2009.

3. TEST REPORTS :

GREEN Instruments:

- In-house Performance Test G36 Oxygen Analyser, unreferenced and dated 05/2009.

Danfoss:

- Environmental Test Reports, unreferenced dated 05.09.2008, No. 2008-2631 dated 2008-09-10, No. 200901677 dated June 2009 (Dry Heat, Damp Heat, IP, Vibration Tests).

Jens-EMC:

- EMC test reports No. 2008-08-22-G1 (G36) dated 2008-10-22 and 2009-05-18 (G36p) dated 2009-06-27.

For modification B0 version:

GREEN Instruments:

- In-house Performance Test G36 Oxygen Analyser according to EN 50104(2010), Version 2.0, dated June 2013.

4. APPLICATION / LIMITATION :

- 4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.
- 4.2 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS **EC Code: 31B** (G36p), **21B** (G36).
- 4.4 - The equipment fulfils the EMC requirements for an installation on the Bridge and Deck Zone.
- 4.5 - Not to be installed in hazardous area and / or in presence of flammable gases.
- 4.6 - Not to be installed in non weather protected area.
- 4.7 - Only Hardware and Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.
- 4.8 - 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.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The above products are to be supplied by **Green Instruments A/S** 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 :

- 6.1 - Trade name.
- 6.2 - Date of manufacture and serial number.
- 6.3 - Equipment type or model identification under which it was type-tested.
- 6.4 - \ or @ conformity marking, as relevant.
- 6.5 - Alternatively, the marking may be presented on a display at equipment start-up.
- 6.6 - The title and version of each software element included in the installed software system shall be either marked or displayed on command on the equipment.
- 6.7 - When the marking and the title and version of the software are displayed only on the display, such information shall also be included in the equipment manual.

7. OTHERS :

- 7.1 - 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: **Green Instruments A/S - DENMARK** will accept full responsibility for informing shipbuilders, shipowners and/or their sub-contractors of the proper methods of fitting and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate No. 22859/A0 BV issued on 25 May 2010 by the Society.

*** END OF CERTIFICATE ***