



Marine & Offshore
Division

Certificate number: 09165/D0 BV

File number: AP 3254

Product code: 3891H

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

KLAY-INSTRUMENTS B.V.

Dwingeloo - NETHERLANDS

for the type of product

PRESSURE TRANSMITTERS / TRANSDUCERS

Pressure and Level Transmitters

Type: Series 8000, 2000 and Hydrobar-Cable.

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.

EC Code: 31

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: 13 Sep 2020

For BUREAU VERITAS,

At BV GRONINGEN, on 13 Sep 2015,

John Mondt



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 SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Pressure and Level Transmitters Series 8000, 8000-SAN, 8000-Cable, 8000-SAN-Cable, Hydrobar-Cable, Hydrobar-EXTD and Hydrobar-Cable-FR and Series 2000, 2000-SAN, 2000-Cable, 2000-SAN-Cable, CER-2000, 2000-Hydrobar-Cable, 2000-Hydrobar- EXTD and Hydrobar-I-Cable. The pressure and level transmitters are all fitted with the same electronics but with various process connections like DIN/ANSI flanges and screw thread. Transmitters are made of stainless steel including SS electronic housings.

1.1 - Specifications:

Series 8000-SAN and Series 8000-SAN-Cable

- Measuring ranges: 0.08 to 80 bar
- Output signal: 4-20 mA, 2-wires
- Accuracy: 0.2% of adjusted span
- Power supply: 12 to 36 VDC (Ex: 13-26.5 VDC)
- Process temperature: -20 to +100°C
- Ambient temperature: -30 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 66

Series 8000 and Series 8000-Cable

- Measuring ranges: 0.1 to 80 bar
- Output signal: 4-20 mA, 2-wires
- Adjustment: Zero and Span internally
- Accuracy: 0.2% of adjusted span
- Power supply: 12 to 36 VDC (Ex: 13-26.5 VDC)
- Process temperature: -20 to + 80°C
- Ambient temperature: -30 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 66

Series 2000 and Series 2000-Cable

- Measuring ranges: 0-0.1 bar to 0-100 bar
- Output signal: 4-20 mA, 2-wires
- HART protocol (option)
- Adjustment: by 3 pushbuttons or H.H.T. (hand held terminal)
- Accuracy: 0.1% of adjusted span
- Power supply: 12 to 36 VDC (Ex: 12-26.5 VDC)
- Process temperature: -20 to +80°C
- Ambient temperature: -20 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 66

Series 2000-SAN and 2000-SAN-Cable

- Measuring ranges: 0-0.04 bar to 0-100 bar
- Output signal: 4-20 mA, 2-wires
- HART protocol (option)
- Adjustment: by 3 pushbuttons or H.H.T. (hand held terminal)
- Accuracy: 0.1% of adjusted span
- Power supply: 12 to 36 VDC (Ex: 12-26.5 VDC)
- Process temperature: -20 to +100°C
- Ambient temperature: -20 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 66

Series CER 2000

- Measuring ranges: 0-10 bar to 0-360 bar
- Output signal: 4-20 mA, 2-wires
- HART protocol (option)
- Adjustment: by 3 pushbuttons or H.H.T. (hand held terminal)
- Accuracy: 0.1% of adjusted span
- Power supply: 12 to 36 VDC (Ex: 12-26.5 VDC)
- Process temperature: -20 to +100°C
- Ambient temperature: -20 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 66

Series Hydrobar-Cable, Hydrobar-Cable-FR and Hydrobar-I-Cable

- Measuring ranges: 0.1 to 50 bar
- Output signal: 4-20 mA, 2-wires
- Adjustment: Zero and Span internally
- Accuracy: 0.2% of adjusted span (Hydrobar-I: 0.1%)
- Power supply: 13 to 36 VDC (Ex: 17-26.5 VDC)
- Process temperature: -10°C to + 70°C (Optional +100°C)
- Ambient temperature: -20 to +70°C
- Intrinsic safety certified: Ex ia IIC T4 Ga
- Protection grade: IP 68 (Wetted parts), IP66 (Electronic housing)

1.2 - Software: V9.x (2000 Series)**2. DOCUMENTS AND DRAWINGS :**

According to Manufacturer's documents filed in AP 3254.

3. TEST REPORTS :

Intrinsic safety certificates (ATEX and IECEx) according to IEC and EN Harmonized standards, Ex ia IIC T4 Ga, issued by DEKRA ATEX: EC-Type Examination Certificates No. 03ATEX1219 X, Issue 5 and No. 03ATEX1092 X issue 4

IECEX: IECEx Certificates of Conformity: No. IECEx DEK13.0060X - Issue No. 0 and IECEx DEK14.0079 X- Issue No. 0

Vibration test report issued by TNO on May 26th 1999 - DNV witnessing to test has been carried out.

EMC Test report issued by NMI (Nederlands Meetinstituut) on 10 Jan. 1996.

EMC test report issued by ELS on 2 May 1997.

Software Release, Doc. DC-13 Rev. 02 dated 30/10/2009

Bolborn Solutions: EMI Measurements on Series Hydrobar-Cable-VM and Series 8000-SAN, 2 Test Reports both dated 11-2008.

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**

4.4 - The equipment fulfils the EMC requirements for installation on Deck Zone and General Power Distribution Zone.

4.5 - Equipment is not to be installed in non-weather protected areas.

4.6 - 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.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The above products are to be supplied by **KLAY-INSTRUMENTS B.V.** in compliance with the type described in this certificate.

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

5.3 - **KLAY-INSTRUMENTS B.V.** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products :

**KLAY-INSTRUMENTS B.V.
NIJVERHEIDSWEG 5
7991 CZ DWINGELOO
NETHERLANDS**

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,
- Ex marking as relevant.

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 pressure transmitters at any time and that **KLAY-INSTRUMENTS B.V.** 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.

7.2 - This certificate supersedes the Type Approval Certificate No. 09165/C0 BV issued on 25 May 2010 by the Society.

***** END OF CERTIFICATE *****