



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-13344**

This is to certify that the
Pressure Transmitter

with type designation(s)
Series 8000 (8000, CER-8000 and 8000-SAN);
Series 2000 (2000, CER-2000 and 2000-SAN);
Series Hydrobar (Hydrobar-cable, Hydrobar-FR and Hydrobar-I)

Manufactured by
Klay-Instruments B.V.
DWINGELOO, Netherlands

is found to comply with
Det Norske Veritas' Rules for Classification of Ships and High Speed and Light Craft
Det Norske Veritas' Offshore Standards

Application
Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Series 8000	D	B	A	B	C (IP66)
Series 2000	D	B	A	B	C (IP66)
Series Hydrobar	C	B	A	B	D

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-07-01**

DNV local station: **Rotterdam**

Approval Engineer: **Ståle Sneen**



for **Det Norske Veritas AS**
Digitally Signed By: **Nesvåg, Odd Magne**

Location: **DNV Høvik, Norway**

Signing Date: **2013-07-03**

Odd Magne Nesvåg
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. If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

This Type Approval covers pressure- and level transmitters comprising of following types:

- Series 2000 (2000, CER-2000 and 2000-SAN),
- Series 8000 (8000, CER-8000 and 8000-SAN),
- Series Hydrobar (Hydrobar-cable, Hydrobar-I and Hydrobar-FR).

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

The cable installation has to be carried out according to the rules for classification of ships with respect to routing, fixing, protection, penetration of decks / bulkheads and the use of cable pipes. Fixing of cables above sensor shall be provided.

Ex installations 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.

Ex-certification is not covered by this certificate and the following paragraph, which is for information only, is based on information received from the manufacturer, but not verified by DNV.

Information on Ex-Certification received from manufacturer – Not verified by DNV

Equipment	Certified	Certificate No.
Type 8000, CER-8000, 8000-SAN, CER-8000-RANGE-G, HYDROBAR-EXTD, HYDROBAR-CABLE, HYDROBAR-FR	Ex II 1 G Ex ia IIC T4 Ga	KEMA 03ATEX1219 X
Type 2000, 2000-SAN, CER-2000, 2000 Hydrobar Cable, Hydrobar-I	Ex II 1 G Ex ia IIC T4 Ga and/or Ex II 1 D Ex ia IIIC T 100°C Da IP6X	KEMA 03ATEX1092 X

Type Approval documentation

DATA SHEETS	DESCRIPTION
D/E/2000/03-11/04	Brochure Series 2000
D/E/8000-overview/06-11/00	Brochure Series 8000
D/E/8000-SAN/09-07/05	Brochure Series 8000-SAN
D/E-Peramic/03-07/06	Brochure Series CER-8000
D/E/Hydrobar-I/03-05/01	Brochure Hydrobar-I
D/E/Hydrobar/11-05/04	Brochure Hydrobar
H/EN/2000-HART/06-2012/18	Instruction Manual ("HART") 2000-SAN, 2000, CER-2000, 2000-HYDROBAR
H/E/8000/06-2012/10	Instruction Manual 8000-SAN, 8000
H/E/Hydrobar/01-2013/13	Manual Hydrobar
H/E/Hydrobar"1"/01-2013/08	Manual Hydrobar "1"
8000-25	GA CER-8000
2000-13	GA Hydrobar-I-Cable
8000-13	GA-Hydrobar-FR-Cable

TEST REPORTS	TYPE OF TEST
TNO, Vibration Test Report 1999-CMC-R030	Vibration
Bolborn EMC Solutions, Series 8000 SAN/01	EMC
Bolborn EMC Solutions, Hydrobar-cable-VM/01	EMC
Bolborn EMC Solutions, Series 2000 SAN/01	EMC
Bolborn EMC Solutions, Series CER-8000-D-N/01	EMC
KEMA, Enclosure Test Report 211828100	Enclosure
TNO, Salt Mist Report BU4.00/036506-1/AA	Salt Mist
Klay, Performance Test 1999-08-05	Performance
Klay, Power Variation Test 1999-07-28	Power Supply Variation Tests
Klay, Power Supply Failure Test 1999-07-28	Electrical Power Supply Failure Test
Klay, Dry Heat Test 1999-07-29	Dry Heat Test

TEST REPORTS	TYPE OF TEST
Klay, Low Temp Test 1999-07-30	Cold Test
Klay, Humidity Test 1999-08-05	Damp Heat Test

Type approval periodical assessment report for A-11133, DNV Rotterdam 2013-05-28

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.

Marking of product

Ref. Product description above.

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE