

TYPE APPROVAL CERTIFICATE**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)**

Issued to

**Klay Instruments B.V.
Dwingeloo, Netherlands**

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****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

Issued at **Høvik** on **2017-08-30**for **DNV GL**This Certificate is valid until **2022-06-30**.DNV GL local station: **Rotterdam**Approval Engineer: **Ståle Sneen****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.



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-FR and Hydrobar-I).

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, 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 GL rules for classification of 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 GL.

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

D/E/2000/10-16/05
 D/E/8000-overview/01-17/01
 D/E/Hydrobar-I/11-13/02
 D/E/Hydrobar/11-13/05
 H/EN/2000-HART/08-2016/24

H/E/8000/08-2016/12
 H/E/Hydrobar/08-2016/17
 H/E/Hydrobar-I/08-2016/14
 8000-202 (2017-03)
 8000-211 (2017-03)
 8000-215 (2017-01)
 8000-225 (2017-01)

TEST REPORTS

TNO, Vibration Test Report 1999-CMC-R030
 Bolborn EMC Solutions, Series 8000 SAN/01
 Bolborn EMC Solutions, Hydrobar-cable-VM/01
 Bolborn EMC Solutions, Series 2000 SAN/01
 Bolborn EMC Solutions, Series CER-8000-D-N/01
 KEMA, Enclosure Test Report 211828100
 TNO, Salt Mist Report BU4.00/036506-1/AA
 Klay, Performance Test 1999-08-05

DESCRIPTION

Brochure Series 2000
 Brochure Series 8000, 8000-SAN, CER-8000
 Brochure Hydrobar 'I'
 Brochure Hydrobar
 Instruction Manual ("HART") 2000-SAN, 2000, CER-2000, 2000-HYDROBAR
 Instruction Manual 8000-SAN, 8000
 Manual Hydrobar
 Manual Hydrobar "I"
 GA Series 8000
 GA Series 8000-SAN
 GA Series Hydrobar
 GA Series CER-8000

TYPE OF TEST

Vibration
 EMC
 EMC
 EMC
 EMC
 Enclosure
 Salt Mist
 Performance

Job Id: **262.1-005075-3**
Certificate No: **TAA00001DA**

TEST REPORTS

Klay, Power Variation Test 1999-07-28
Klay, Power Supply Failure Test 1999-07-28
Klay, Dry Heat Test 1999-07-29
Klay, Low Temp Test 1999-07-30
Klay, Humidity Test 1999-08-05

TYPE OF TEST

Power Supply Variation Tests
Electrical Power Supply Failure Test
Dry Heat Test
Cold Test
Damp Heat Test

Type approval renewal assessment report for A-13344, DNV GL Rotterdam 2017-06-20

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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE