

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Level Switches**

with type designation(s)

A, AA, B, BB, C, DA, DAA, DB, DBB, DC, UXA, UXAA, UXB, UXBB, HA, HAA, HB, HBB, P, PV, M, MV

Issued to

Bachofen AG
Uster, ZH, Switzerland

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products are approved by this certificate are accepted for installations on all vessels classed by DNV GL.**

Temperature	B
Humidity	B
Vibration	B
EMC	Not relevant
Enclosure	Type U: D, Type D: C. All other types: B

This Certificate is valid until **2022-01-18**.Issued at **Hamburg** on **2018-09-14**for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Marco Rinkel**

Joannis Papanuskas
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.

Job Id: **262.1-021004-2**
Certificate No: **TAA00000AH**
Revision No: **2**

Product description

Type: A, AA, B, BB, DA, DAA, DB, DBB, UXA, UXAA, UXB, UXBB, HA, HAA, HB, HBB, P, PV, M, MV
with prefix 10, 30, 40

Flange type	Float type
01 C	
21 C, E, V, N or L	01, 04, 041, 07, 08T1
22 C, E, V, N or L	with or without suffix Gx (x=1, 2 or 3)
31 C, E, V, N or L	140 050 081T1 090
32 C, E, V, N or L	141 051 082T1 091
41 C, E, V, N or L	052 083T1 092
42 C, E, V, N or L	053 084T1 093
	054 095

.A 01 04 or .P 01 04. and variations with rod extension facility
.A 01 041or .P01 041 and variations with fixed float module
Nominal pressure: PN 25 (flange 01), PN 40 DIN-flanges
Output: microswitch, 1 SPDT - max. contact rating 5 A, 250 V AC
Degree of protection: standard IP 65
Degree of protection DA: IP 66/ IP67
Degree of protection UA: IP 68
P 01 04 pneumatic 3/2 way ON/OFF-valve, 0 - 10 bar
Density: standard 0.7 kg/dm³ ; 0.5 kg/dm³ and 0.8 kg/dm³ available
Float options: adjustable mech. switch differential, protective bellow

Type: C and DC

Compact Switch Type: C 01C 05; Option: Type DC 01C 05
Flange square 92 x 92 mm, 92 mm PCD
Density of the liquid min. 0.7 kg/dm³
Operating differential 12 mm, fixed
Switch element Microswitch SPDT with silver contacts
Switch rating 250 VAC, 3 A 30 VDC, 0.5 A
Degree of protection IP65 for C 01C 05, IP 67 for DC 01C 05
Operating temperature 0 to 150°C for C 01C 05 and 0 to 120°C for DC 01C 05

Accessories:

Counter flange and test actuator to flange 01, rod extensions

Test Standard

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.
Guidelines for the Performance of Type Approvals VI-7-2, Edition 2012 for .A 01 04 or .P 01 04. and .A 01 041or .P01 041.

Approval conditions

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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

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Application/Limitation

Maximum liquid temperature:

Switch module Temperature [°C]	
Hx	400
Dx	120
Ux	80
All other types	330

For switches with float units 140 and 141:

- The float stops are to be secured by split pins through the rod.
- Guiding brackets for the vertical float rod is to be provided. The brackets are subject to approval in each case.
- Gasket material is to be oil resistant.
- For use in liquefied gas carriers, Materials and Material Certificates shall comply with DNV GL Rules for Ships Pt.5 Ch.5 Sec.2.

Type Approval documentation

Test Reports:

SEV Test Report No. 84.13150	dated 30-08-1984
20111126.A02.01	dated 26-07-2011
LRS-11-001, LRS-11-002, LRS-11-003	dated 20-07-2011

Level Switch Catalogue LTKEN1610	dated 10/2016
Catalogue No. LTKDE1610	dated 10/2016

Drawing No. 2909.1, 2909.2, SAM P/PV, SAM M/MV	
Drawing SWM 041; 2909.1 dated 11.08.77, 2909.2 dated 21.06.78	
5040, 5041, 5306	dated 23-05-2011
5101	dated 05-04-2011
Data Sheet LOD006EN	dated 10/2015
Description of Trimod Besta Compact Switch	dated 05-12-2016
Operating Instruction LOB010X	dated 04/2016

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