



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA000002E
Revision No:
2

This is to certify:

That the **Level Alarm System**

with type designation(s)
K-Gauge HLA System

Issued to
Kongsberg Maritime AS
Ranheim, Norway

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:

Temperature	B (D for GL-7 Level Switches)
Humidity	B
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules to be provided upon installation on board (C for GL-7 Level Switches)

Issued at **Høvik** on **2021-06-30**

This Certificate is valid until **2023-06-29**.
DNV local station: **Trondheim**

Approval Engineer: **Jens Erling Bråten**



for **DNV**
Digitally Signed By: **Lisbeth Iversland**
Location: **DNV Høvik, Norway**
on behalf of

Jan Tore Grimsrud
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.





Job Id: 262.1-003864-7
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Product description

K-Gauge HLA System, consisting of:

Description:	Type:
Zener Barrier	Z-972, DZ-110/U, DZ-120
Level Switch	GL-7B/n (n=1 for one level; n=2 for two levels)
Operator stations and controllers	Covered by separate Type Approval Certificates (*)

(*) The HLA system is a concept based on dedicated level switch and barriers as listed above, and which is interfaced to a K-Gauge, K-Chief 600 or K-Chief 700 system. Operator stations, I/O units and controllers are therefore covered by separate Type Approvals, see TAA00000S6 (K-Gauge), TAA0000018 (K-Chief 600) and TAA0000W5 (K-Chief 700)

For HLA SW description please refer to document "SW revision history for K-Gauge, HLA-F", issue F, dated 2013-10-23.

Application/Limitation

For vessels with Tanker for Oil/Chemicals/Gas notations there are requirements for independency between level gauging, high level alarms and overflow protection systems. The actual setup of the HLA with the other systems shall therefore be documented for each delivery. Where independency is required, note that as long as the high level alarm is interfaced to separate I/O and controller unit(s), it may share the user interface with the K-Gauge/K-Chief system provided there is redundancy in operator stations and there is a redundant network between the controllers and the operator stations.

The following documentation of the actual application shall be submitted for approval by system integrator in each case:

- Reference to this Type Approval Certificate
- System block diagram
- Single line diagram for IS-circuits
- Drawing showing location of equipment
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Test program for certification

The Type Approval covers hardware and software listed under Product description.

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.

Product certificate

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. However, this will be covered by the total system delivery certification as defined in K-Gauge system type approval certificate TAA00000S6.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

Documentation for renewal/update of TAA000002E, received 2018-08-08:

- Datasheet for DZ-110/U, Doc. No. P-DZ110U/CE Rev. C
- Datasheet for DZ-120, Doc. No. P-DZ120/CE Rev. B
- Datasheet for GL-7B, Doc. No. GL-7B/CE Rev. C

SW revision history for K-Gauge HLA", issue F, dated 2013-10-23.

NEMKO report E16236.00, dated 2016-11-14.

Type approval assessment report, DNV GL Trondheim, dated 2021-03-04.



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Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.
Applicable tests according to DNVGL-CG-0339, edition December 2019.

Place of manufacture

- Kongsberg Maritime, Skonnertvegen 1, 7053 Ranheim, Norway
- Kongsberg Maritime China Jiangsu Ltd., No. 711 Changjiang Road, Runzhou Industry Park 212000 Zhenjiang, China. (Manufacturing of GL-7B only)

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE