

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Monitoring System**

with type designation(s)  
**K-Gauge Tank Gauging 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:**

<b>Temperature</b>	<b>B (D for Tank Radars and for GC-306)</b>
<b>Humidity</b>	<b>B</b>
<b>Vibration</b>	<b>A</b>
<b>EMC</b>	<b>B</b>
<b>Enclosure</b>	<b>Required protection according to the Rules to be provided upon installation on board (C for GLA 300 and GLA 310 Tank Radars)</b>

Issued at **Høvik** on **2019-04-01**

This Certificate is valid until **2021-03-31**.  
DNV GL local station: **Trondheim**

Approval Engineer: **Jens Erling Bråten**



for **DNV GL**  
Digitally Signed By: Sneen, Ståle  
Location: DNV GL 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.



Job Id: **262.1-001437-8**  
Certificate No: **TAA0000056**  
Revision No: **1**

## Product description

K-Gauge Tank Gauging System, consisting of:

Description	Type
Work station (PC/monitor)	Type Approval Cert.number: TAA.....
Radar Tank Gauge	GLA-310/5, GLA-310/5 TOP, GLA-310/5 NH3, GLA-310/5 FUEL, GLA-310/5 DUAL
Signal Processing Unit	GLK-300
Temperature Transmitter	GC-306
Microcomputer + IO modules	RCU 500 series * and DPU series **
Transmitter Barrier	DZ-110, DC-110/U, DZ-120

(\*) The hardware for the microcomputer and I/O modules is covered by K-Chief 700 Type Approval certificate, see product description 304844 for AIM8.3, Type Approval Certificate number: TAA.....

(\*\*) The hardware for DPU series is covered by K-Chief 600 Type Approval certificate, Type Approval Certificate number: TAA.....

(Type/make and certificate No's. to be filled in on master copy of certificate when submitted for case by case approval)

### Software versions:

As listed in document "SW revision history for K-Gauge", issue N, dated 2018-10-08.

## Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area 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.

The following documentation of the actual application is to 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.

### Product certificate

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The Certification of Application Functions is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

### Application 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.

Job Id: **262.1-001437-8**  
Certificate No: **TAA00000S6**  
Revision No: **1**

## Place of manufacture

Skonnertvegen 1  
7053 Ranheim,  
NORWAY

## Type Approval documentation

CD with manuals, datasheets, drawings, Ex certificates, test reports etc as described in document "TA- documentation for certificate application of K-Gauge", issue F, dated 2011-04-12.

"Test Report – Electromagnetic Compatibility" by Nemko. Order No.: 16562, Rev.2.0, issued 2008-05-14. Updated manuals, datasheets and Ex certificates as described in email of 2013-03-22, correspondence No. 262.1-001437-J-24.

New documentation as submitted on 2013-12-17 described in "TA- documentation for extension to existing K-Gauge Type Approval from DnV Certificate number: A-13309 and A-13204".

"SW revision history for K-Gauge", issue K, dated 2015-02-16.

Revised data sheets for renewal of A-13759:

- K-Gauge TOP Doc. No. 386773 rev.B
- GLA-310/5 Doc. No. 383758 rev.C
- GC-306 Doc. No. 371645 rev.C

Additional documentation for renewal/update of A-14296, received 2016-05-12:

- Datasheet P-DZ110/U\_CE Rev.A
- Datasheet P-DZ120\_CE Rev.A
- ENV/EMC Report E15308.01

Additional documentation for renewal/update of TAA00000S6, received 2018-08-08:

- Datasheet GLK-300 Rev.E
- Datasheet GL-7B Rev.C
- Datasheet GLA-310/5-NH3 Rev.A
- Datasheet GLA-310/5-FUEL Rev.B
- Datasheet K-Gauge TOPS Rev.B
- Datasheet GLA-310/5 Rev.C
- Datasheet GLA-310/5 DUAL, Rev.A
- Vibration Report GLA-310/5 DUAL, Doc. No. 443414 Rev.A
- K-Gauge CTS\_Statement vibration GLA-310/5 DUAL

SW revision history for K-Gauge", issue N, dated 2018-10-08

Type approval renewal assessment report, DNV GL Trondheim, dated 2019-04-11.

## Tests carried out

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

## 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