



Marine & Offshore

Certificate number: 17755/D0 BV

File number: AP 3757

Product code: 39611

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Kongsberg Maritime AS

Ranheim - NORWAY

for the type of product

CARGO MULTIPURPOSE MONITORING SYSTEMS

Cargo Monitoring and Control System

Type K-Gauge

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships.

EC Code : 31/31S

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 23 Oct 2028

For Bureau Veritas Marine & Offshore,

At BV OSLO, on 23 Oct 2023,

Rune MARSTEIN

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarnb.com/veristarnb/jsp/viewPublicPdfTypec.jsp?id=mjwuh2gfmt>

BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Kongsberg K-Gauge systems are designed for measuring level, pressure and temperature in tanks, typically configured in system types as listed below:

K-Gauge CLS

Cargo Level System for monitoring of level, pressure and temperature on cargo tanks for oil, product and chemical cargo. Also included monitoring of level in ballast and service tanks when operated from same system. Based on either K-Chief 600 or K-Chief 700 and SW components.

K-Gauge HLA

High Level and Overfill system independent from the CLS system on oil, product and chemical tanks. Based on either K-Chief 600 or K-Chief 700 and SW components.

K-Gauge GAS

Cargo Level System for monitoring of level, pressure and temperature on gas tankers. Also included monitoring of tank and pressure related to gas as fuel. Based on either K-Chief 600 or K-Chief 700 and SW components.

K-Gauge CTS

Custody Transfer System for LNG tankers. Based on either K-Chief 600 or K-Chief 700 and SW components.

K-Gauge TOPS

Radar based Tank Overfill Protection System for gas tankers. Based on either K-Chief 600 or K-Chief 700 and SW components.

K-Gauge RSS

Remote Sounding System for ballast and service tanks, including both electro and electro-pneumatic type. Based on either K-Chief 600 or K-Chief 700 and SW components.

The hardware components used in the **K-Gauge** concept are based on either K-Chief 600 or K-Chief 700 technology, according to the following table :

Component	Certificate
Hardware for the microcomputer (RCU) and I/O modules (K-Chief 700)	53826/xx BV
Hardware for DPU series and I/O modules (K-Chief 600)	09413/xx BV
Special components for K-Gauge	21922/xx BV

2. DOCUMENTS AND DRAWINGS:

K-Gauge CLS 600 Operator Manual, doc. No. 385541C, dated Nov. 2019.

K-Gauge GAS 600 Operator Manual, doc. No. 387761B, dated Nov. 2020.

SW revision history for K-Gauge, No. 386311P, dated 2023.08.14.

K-Gauge CLS 700 Operator Manual, doc. No. 458335A, dated Jan. 2020.

K-Gauge GAS 700 Operator Manual, doc. No. 458319A, dated Feb. 2020.

K-Gauge HLA High Level Alarm System (600), Operator Manual, doc. No. 448723A, dated Apr. 2019.

K-Gauge HLA 700 High Level and Overfill Alarm System, Operator Manual, doc. No. 422699A, dated Mar 2017.

3. TEST REPORTS:

n.a.

4. APPLICATION / LIMITATION:

4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.

4.2 - The system may be used on cargo tanks of ships granted with service notation Oil Tanker, Product Tanker, Chemical Tanker and Liquefied Gas Carriers.

4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31S** for Radars and **31** for other modules

4.4 - The equipment (with electronic modules installed within adequate metallic enclosure and filter on power lines) fulfils the EMC requirements for installation on the Bridge and Deck Zone.

4.5 - Drawings for installation onboard each ship, including wiring and location/installation of sensors, must be submitted for approval.

4.6 - The equipment, once installed on board ship, is to be tested in accordance with the above referred requirements with witnessing of a Society's Surveyor.

4.7 - Only Hardware and Software successfully tested together in compliance with the requirements as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.

4.8 - Suitability of materials with intended cargoes (for radars) is to be confirmed in each case.

4.9 - Factory Acceptance and On-board Tests are to be performed in accordance with requirements for system category II equipment.

4.10 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev 8.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The **K-Gauge systems** are to be supplied by **KONGSBERG MARITIME AS** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.3 - BV product certificate is required.

5.4 - The components listed in §1 have to be covered by a valid type approval certificate, issued by the Society.



6. MARKING OF PRODUCT:

- Maker's name or trade mark.

- Serial number of the units.

- Equipment type number or model identification under which it was type-tested.

- Ex marking, as relevant

-  or  conformity marking, as relevant

- The title and version of each software element included in the installed software system shall be either marked or displayed on command on the equipment.

7. OTHERS:

7.1 - It is **KONGSBERG MARITIME AS** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate No. 17755/C1 BV issued on 02 Sep 2020 by the Society.

***** END OF CERTIFICATE *****