



## TYPE APPROVAL CERTIFICATE

**Certificate No.** : CPH04968-AC004                      **Initial Approval** : 20th November, 2007  
**Product** : Cargo Monitoring and Control System  
**Manufacturer** : Kongsberg Maritime AS, Trondheim  
Skonnertvegen 1, NO-7053 Ranheim, Norway

**Product Description** : Type : K-Gauge

" See Appendix 1 "

**Approval Condition** : " See Appendix 1 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt. 6, Ch. 2, Art. 301 & Pt. 7, Ch. 1, Art. 1002 of the Rules for Classification, Steel Ships

This Certificate is valid until 19th November, 2022

Issued at Busan, Korea on 23rd December, 2019



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No (ME19037318479) and certificate No.(CPH04968-AC004).



KOREAN REGISTER OF SHIPPING

General Manager of  
Marine & Ocean Equipment Team

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
  2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
  3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
  4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

## Appendix 1

# Product Description and/or Approval Condition

Certificate No : CPH04968-AC004

Date of Issue : 23rd December, 2019

## A. Product Description

### 1. Product Specification

#### 1) System Description (Type : K-Gauge)

K-Gauge is LNG & LPG tank Monitoring and Control System including Overfill protection system with temperature and pressure transmitters, safety barriers, processing and alarm handling units.

#### 2) System Components

- Radar Tank Gauge : GLA-310/5-FUEL, -NH3 (Ex ia IIC T4)
- Signal Processing Unit : GLK-300 (Ex ia IIC)
- Remote Control Unit : RCU 502
- Transmitter Barrier : DZ-110/U, DZ-120 (Ex ia IIC)
- IO Module : RD10R420, RMP420
- Temperature Transmitter : GC-300, GC-306 (Ex ia IIC T4)
- Workstation : MP8200 (KR TA Cert. No. CPH26308-AC002)

#### 3) Software Version

- SW revision history for K-Gauge Issue No.N (2018.10.08)

### 2. Approved Drawings and Documents

#### 1) Data sheet

- GLA-310/5-FUEL : 394663 (Rev.B), GLA-310/5-NH3 : 411509 (Rev.A)
- GLK-300 : P-GLK300/CE (Rev.G)
- RCU 502 : 312739 (Rev.C, 2013.02)
- DZ-110/U : P-DZ110U/CE (Rev.B), DZ-120 : P-DZ120/CE (Rev.B)
- RD10R420 : 312745 (Rev.A, 2010.10), RMP420 : 312743 (Rev.B)
- GC-300 : P-GC300/CE (Rev.I), GC-306 : 371645 (Rev.C)

#### 2) Ex-proof Certificate

- GLA-310/5 : Sira 14ATEX2056X (Issue.0, 2014.12)
- GLK-300 : Presafe 14 ATEX 5412 X (Issue.2, 2017.08)
- DZ-110/U : Presafe 14 ATEX 4368 (Issue.3, 2017.08)
- DZ-120 : Presafe 16 ATEX 7965 (Issue.1, 2017.08)
- GC-300, GC-306 : Sira 14ATEX2054X (Issue.1, 2017.08)

### 3. Test Reports, etc.

#### 1) Environmental / EMC / IP Test Report

- Report No. 209536 Issued 2012.08 by Nemko
- Report No. 298130 Issued 2015.12 by Nemko
- Report No. E09680.00 Issued 2009.06 by Nemko
- Report No. E13227.00 Issued 2013.10 by Nemko
- Report No. E15308.02 Issued 2016.07 by Nemko
- Report No. E17118.00 Issued 2017.09 by Nemko

## B. Approval Condition

### 1. Application & Limitation

- 1) This approval is granted on the basis of the test reports and the approved documentation.
- 2) The manufacturer should inform this Society of all kinds of revisions of the equipment including software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 3) Explosion-proof certification by a notified/recognized Certification Body is not covered by this certificate. Ratings and Special Condition for Safe Use in hazardous areas are to be obtained from the relevant valid Ex-Certificate.
- 4) PC and monitor are to be separately type approved by this Society.

## Appendix 1

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Certificate No : CPH04968-AC004

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### 2. Individual Product Cert. and Drawing Approval Requirement

- 1) In case where this system is installed on board, the system drawings for individual vessel are to be approved by this Society.
- 2) Individual Product Certification is required.

### 3. Marking

- 1) The product or packing is to be marked with the manufacturer's name and type designation on a suitable position.

### 4. Others

- 1) Test condition

Test	Condition	Remark
EMC	All locations including the bridge and deck zone	-
Temperature	-45 ~ +85°C for GC-300, GC-306, GLA-310/5	-
	-15 ~ +70°C for GLK-300	-
	-20 ~ +70°C for DZ-110/U, DZ-120	-
Vibration	Acceleration $\pm 0.7g$	-
Degree of protection	IP66, 67	-

< End of Certificate >