

Type Approval Certificate



[Cargo Tank Monitoring System]

Initial Approval 27 August 2009

Manufacturer Kongsberg Maritime AS, Trondheim
Skonnertvegen 1, NO-7053 Ranheim, Norway

Product Description Type : GL-300

" 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.

Pt. 6, Ch. 2, Art. 301 & Pt. 7, Ch. 5, Sec. 13 of the Rules for Classification, Steel Ships.

This Certificate is valid until 26 August 2029
Issued at Busan, Korea on 19 December 2024



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.(ME24059761650) and certificate No.(CPH04968-AC005).



KOREAN REGISTER

*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.

Product Description and/or Approval Condition

Date of Issue : 19 December 2024

A. Product Description

1. Product Specification

- 1) System Description (Type : GL-300)
GL-300 Tank Monitoring measures the ullage/level, inert gas pressure and temperature in tanks onboard ships.

- 2) System Components

GLA-300 and GLA-310 Radar Tank Gauge(RTG)

- Half power beam width 6° ($\pm 3^\circ$)
- Measuring range 0 to 50m
- Operating temperature -45 to +80°C (Single) / -45 to +70°C (Double)
- Stainless steel AISI 316
- Integrated tank pressure transmitter
- Cable spec. : 3 x twisted pair common screen
(1 Power, 1 Digital, 1 HART)
- Ex-Certification : Ex ia IIC T4 (Sira 14ATEX2056X issue 4)
- Protection grade : IP 66/67

GC-300 and GC-306 Cargo Temperature Unit (CTU)

- 1, 2 or 3 MN1535 Temperature Sensors
- Stainless steel AISI 316
- Output signal : HART (1 Pair)
- Ex-Certification : Ex ia IIC T4 (Sira 14ATEX2054X issue 3)
- Temperature range : -50 to 160°C
- Protection grade : IP 66/67

GLK-300 Signal Processing Unit (SPU)

- Power supply : 24 VDC (18 to 32V)
- Power consumption : 8 W typical
- Ex-Certification : [Ex ia]IIC (zener barrier, Presafe 14 ATEX 5412 X issue 3)
- Communication : Dual Ethernet
- Input/output : 1 radar input, 1 HART input

GLH-320 Radar Tank Gauge Electronic Unit

- Ex-Certification : [Ex ia]IIC T4 (Sira 14ATEX2056X issue 4)

GT406 Pressure Sensor

- Measuring range : 0.5 - 50 bar, 0.8 - 1.8 bar
- Output signal : 4 - 20mA, HART
- Ex-Certification : Ex ia IIC T5 (Presafe 20 ATEX 08383X issue 0)

- 3) Software

- GLK-300 DSP Signal processing software ver.1.1.x
- GLB-300, GLB-320 Microwave software ver. 2.0.x
- GLB-300 Inert pressure software ver. 1.0.x
- GC-300 software version ver. 1.0.x
- GC-306 software version ver. 1.0.x
- GT406 Sensor software ver. 1.0.x

2. Approved Drawings and Documents

- 1) Drawings

GC-217, GL-2458, UG-896, UG-902, GL-2459, GL-2534, GL-2575
 GLB 300 housing_rev04, GLB-300_BottomSide_Components_only,
 GLB-300_TopSide_Components_only, GLK-300_Mainboard_BottomSide_Components,
 GLK-300_Mainboard_TopSide_Components, GLK-300_Piggyback_BottomSide_Components,
 GLK-300_Piggyback_TopSide_Components, GCB-300_BottomSide_Components_only,
 GCB-300_TopSide_Components_only

- 2) Datasheet

GC-300_CE Rev. J, GLA300_CE Rev. F, GLK300_CE Rev. I,
 GLA300_Aspahlt_CE Rev. E, GLA300H_CE Rev. F, GLA300HS_CE Rev. E,
 GLH-320 436580 Rev. B, GT406_CE Rev. C, GLA310/5 383758 Rev. F,
 K-Gauge TOP 386773 Rev. B, GLA-310/5-G 394663 Rev. E, GLA-310/5-NH3 411509 Rev. B,
 GLA-310/5 Dual 442205 Rev. G, GLA-310/5-LH2 435445 Rev. B, GC-306 371645 Rev. D

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- 3) Manual
GL300_DE REV. I, GL300_EE REV. E, GL300_FE REV. I, KG_GL300_BE REV. B
- 4) Others
KL-SW-010 GL-300 Test plan, Visio-GL300 system topology
SW revision history for GL-300 386310 Rev. K, KL-SW-021 K-Gauge GL300 HW-SW overview,
SW revision history for Pressure transmitters 424746 Rev. I

3. Test Reports, etc.

- 1) Environmental / EMC / IP Test Report
P-APPROV-GL-300/XE Rev. D(09-06-2009), E09680.00(NEMKO_24-06-2009),
209536(NEMKO_21-08-2012), E10017.00(NEMKO_19-01-2010),
E17118.00(NEMKO_27-09-2017), E16236.00(NEMKO_14-11-2016),
E16195.01(NEMKO_28-03-2017), E21214.00(NEMKO_01-11-2021)

B. Approval Condition

1. Application & Limitation

- 1) This approval is granted on the basis of the test reports and the approved documentation.
- 2) Degree of protection is to be complied with Rule Pt. 6 Ch. 1 Sec. 2 201.2. (5).
- 3) The manufacturer is to inform this Society of all kinds of revisions of the equipment including the major changes of software. If the changes are recognized to affect functionality of the approved equipment, type tests to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 4) 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.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is not 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-300/306, GLA-300/310, GLH320, GT406 -15 ~ +70°C for GLK-300	- -
Vibration	Acceleration $\pm 0.7g$	-
Degree of protection	IP66, 67 for GC-300/306, GLA300/310 IP2x for GT406	- -

< End of Certificate >