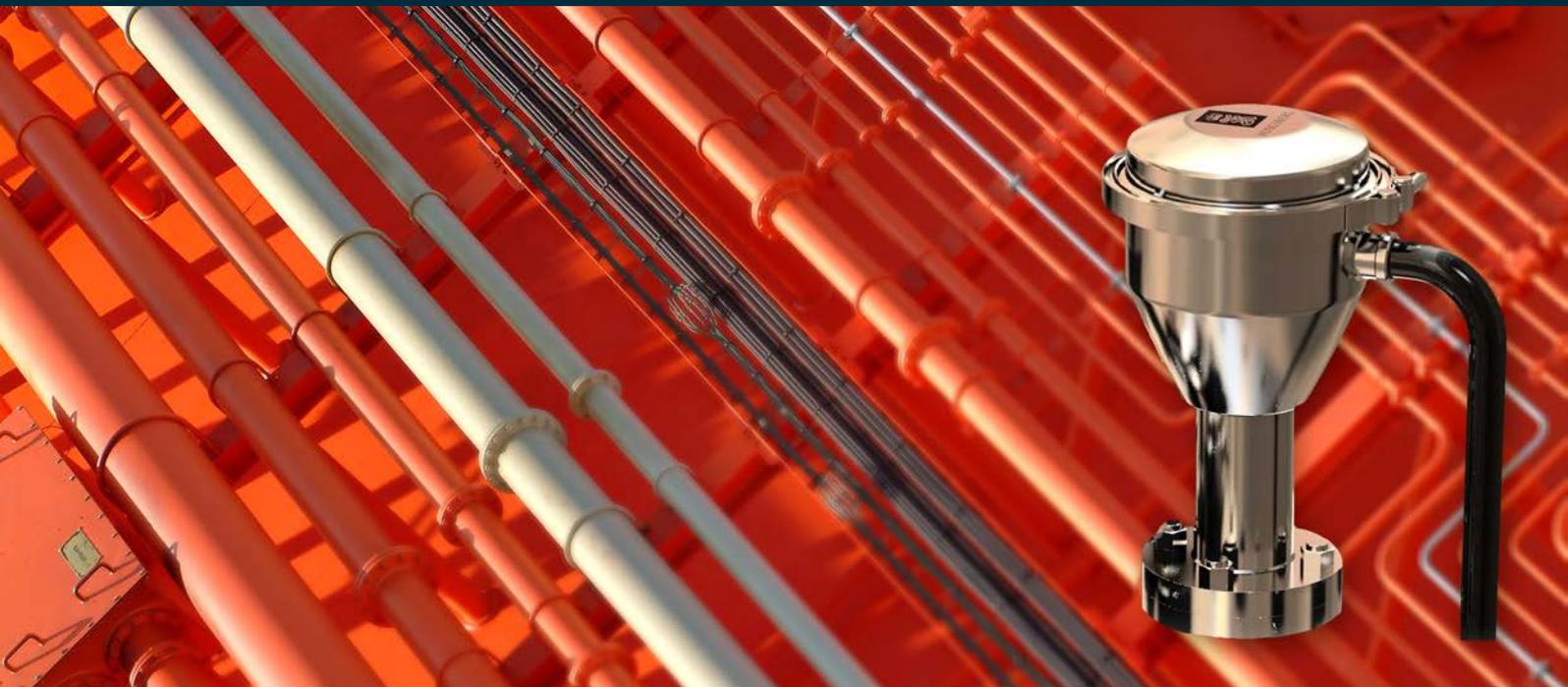


# GLA-310/5



KONGSBERG



## RADAR TANK GAUGE FOR GAS CARRIERS

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The KONGSBERG Radar Tank Gauge (RTG), GLA-310/5 is designed to measure level in tanks containing liquefied gases. Accurate measurement is possible regardless of the tank atmospheric conditions. Flexible design ensure easy adaptation to LPG (Propane, Butane), LEG (Ethylene, Ethane), VCM, liquefied Ammonia ( $\text{NH}_3$ ), and LNG. The RTG is type approved, and due to its modular design, can be applied as both primary and secondary level gauge, and as tank overfill protection sensor onboard gas carriers.

### Principle of operation

The RTG employs the Frequency Modulated Continuous Wave (FMCW) principle with dual sweep technology to eliminate Doppler-effect caused by cargo movement. A frequency sweeping microwave signal is emitted by the RTG through a standpipe. The distance (i.e. the ullage) is derived from the time delay of the reflected signal. The standpipe is assembled by sections adjusted to match the total tank height. The pipes have ventilation holes allowing the vapour pressure inside and outside the pipe to stabilize, thus allowing the liquid to rise or fall unimpeded in the pipe.

Each pipe section is supplied with flanges prepared with reference markers. The liquid level and the markers are measured simultaneously, so the system automatically verifies itself at every measurement. By careful calibration of the pipe sections length before installation, the positions of the markers are recorded and stored in the system. By comparing the liquid echo with the signature plate echo, a continuous auto-calibration of the measurement is done.

The electronic unit in the RTG includes a patented signal detection method that ensures optimum performance. Combined with its superb signal-to-noise ration, GLA-310/5 offers the highest measurement reliability and accuracy.

Each RTG is connected to a dedicated signal processing unit, where the AutoCAL<sup>®</sup> principle is employed.

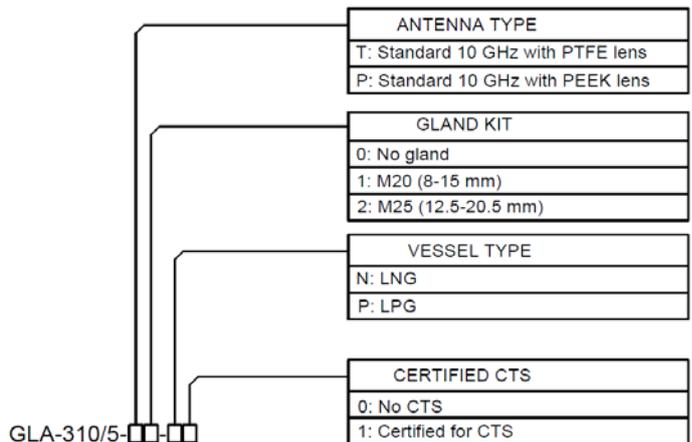
### AutoCAL<sup>®</sup>

AutoCAL<sup>®</sup> is a unique calibration and verification function in the KONGSBERG system. Gas vapour density and mixture of gases influence the propagation speed of the radar signal, thus the accuracy of the measurement. By using pipe joint reference markers, AutoCAL<sup>®</sup> continuously compensates for the changes caused by the differences in the propagation speed. AutoCAL<sup>®</sup> ensures high accuracy over the whole measurement range, independent of the gas mixture, pressure and temperature. With AutoCAL<sup>®</sup>, the influence of the gas vapour density and composition is measured and compensated for automatically.

## FEATURES

- Closed level gauge suitable for all liquefied gas tank designs
- Measuring range 0 to 50 metres
- Outstanding accuracy in the whole range
- Superior sensitivity - suitable for precise measurement of products with low dielectric constant
- Approved for Custody Transfer (CTS) on board ships
- Continuous level verification - AutoCAL®
- Utilize 50 mm still pipe
- Modular design
- Intrinsically safe for use in all zones

## ORDER CODE



## TECHNICAL SPECIFICATIONS

Measuring range: 0 to 55 meter  
 RMS accuracy\*: 2 mm  
 Signal output: RS485 (2 pair cable interface to GLK-300 SPU)  
 Frequency: X-band (10 GHz)  
 Radiated power: < 1 mW  
 Ex classification:  $\text{Ex ia IIC T4}$   
 Ex certification:  $\text{CE 0044}$   
 IECEx SIR 14.0025X  
 Sira 14ATEX2056X

Environmental standards: IACS E10  
 CISPR 22

Operating temperature: -45 °C to +85 °C  
 Tank temperature: Down to -165 °C  
 Tank pressure: Up to 20 bar g

### Materials

Body: AISI 316(L)  
 Antenna lens: PTFE or PEEK  
 Standpipe: AISI 316(L) or Al alloy 5083

Protection grade: IP 66/67  
 Weight: 10.7 kg  
 Cable size:  $\text{Ø}12\text{-Ø}20$  mm

### Safety data

Max. input voltage:  $U_i = 14.3$  VDC  
 Max. input power:  $P_i = 2.1$  W  
 Max. input current:  $I_i = 560$  mA  
 Max. internal capacitance:  $C_i = 347$  nF  
 Max. internal inductance:  $L_i = \text{negligible}$

Type approval: ABS, BV, CCS, DNV-GL, KRS, LRS, NK

\* RMS sensor accuracy at controlled environment

Specifications subject to change without any further notice.

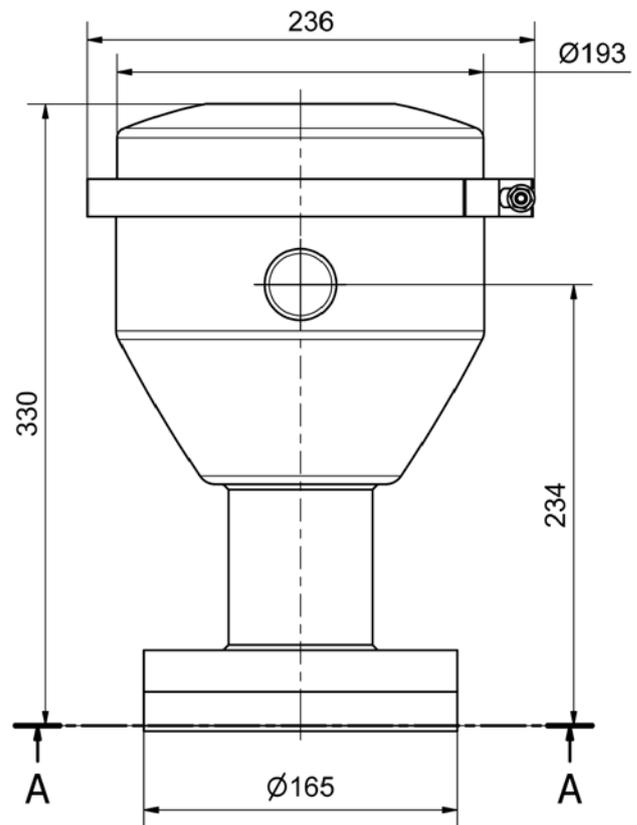


Figure 1: Dimensional sketch of GLA-310/5