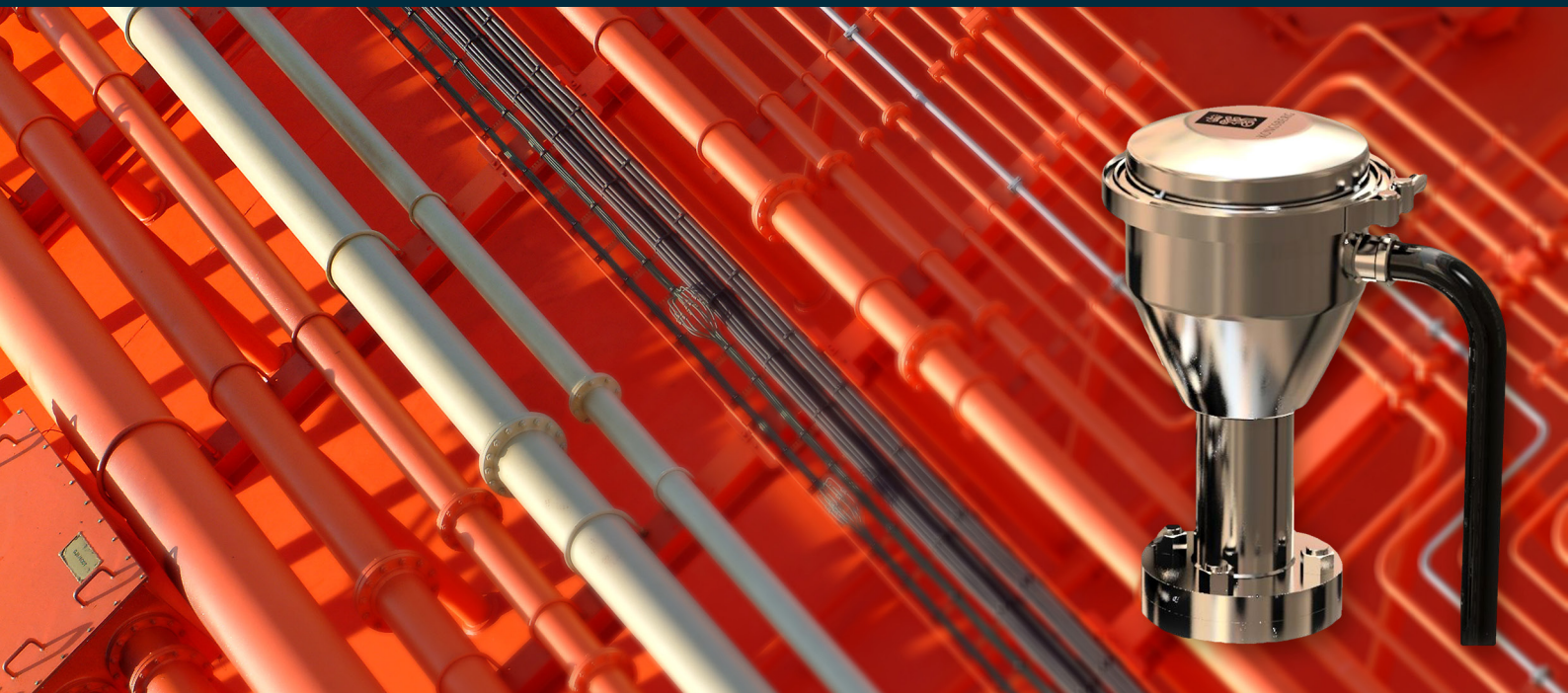


GLA-310/5 DUAL



KONGSBERG



RADAR TANK GAUGE FOR GAS CARRIERS

The KONGSBERG Radar Tank Gauge (RTG), GLA-310/5 DUAL is designed for redundant measurement of 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 (NH_3) and LNG.

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. Frequency sweeping microwave signals are emitted from two separate electronic units and through a common 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 units in the RTG includes a patented signal detection method that ensures optimum performance. Combined with its superb signal-to-noise ratio, GLA-310/5 offers the highest measurement reliability and accuracy.

Each electronic unit is connected to a dedicated signal processing unit, where the AutoCAL® principle is employed.

AutoCAL®

AutoCAL® 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® continuously compensates for the changes caused by the differences in the propagation speed. AutoCAL® ensures high accuracy over the whole measurement range, independent of the gas mixture, pressure and temperature. With AutoCAL®, 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.
- Dual transmitter with independent units, providing primary & secondary level gauging.
- Combined level and TOP functionality s subject to case-by-case approval by class
- Each transmitter connects to its dedicated signal processing unit with power and IS barrier.
- Approved for Custody Transfer (CTS) on board ships.
- Continuous level verification - AutoCAL®
- Utilize 50 mm standpipe.
- Modular design.
- Intrinsically safe for use in all zones.

TECHNICAL SPECIFICATIONS

Measuring range: 0 to 55 meter
 RMS accuracy*: 2 mm
 Signal output: RS485 (from each unit: 2 pair cable interface to GLK-300 SPU)
 Frequency: X-band (10 GHz)
 Radiated power: < 1 mW
 Ex classification: Ⓢ II 1 G Ex ia IIC T4 Ga
 Ex certification: IECEx SIR 14.0025X
 Sira 14ATEX2056X

Environmental standards: IACS E10
 CISPR 22

Operating temperature: -45 °C to +80 °C
 Tank temperature: Down to -165 °C
 Tank pressure: Up to 21 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: 12.5 kg
 Cable size: Ø12-Ø20 mm

Safety data (power / each unit)

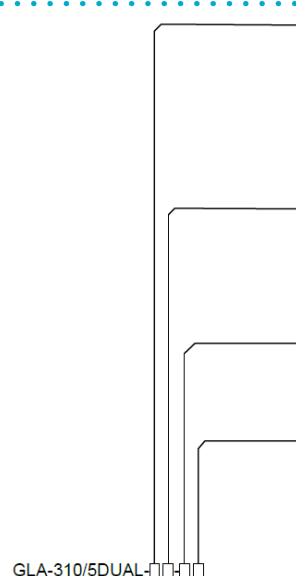
Max. input voltage: $U_i = 14.3$ VDC
 Max. input power: $P_i = 2.1$ W
 Max. input current: $I_i = 360$ mA
 Max. internal capacitance: $C_i = 75$ nF
 Max. internal inductance: $L_i =$ negligible

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

* RMS sensor accuracy at controlled environment

Specifications subject to change without any further notice.

ORDER CODE

	ANTENNA TYPE
	T: Standard 10 GHz with PTFE lens
	P: Standard 10 GHz with PEEK lens
	R: 10 GHz Refit antenna
	A: 5 GHz Ammonia antenna PTFE
	B: 5 GHz Ammonia antenna PEEK
	F: 10 GHz Fuel antenna PTFE
	G: 10 GHz Fuel antenna PEEK
	GLAND KIT
	0: No gland
	1: 2xM20 (8-15 mm)
	2: 2xM25 (12.5-20.5 mm)
	3: 1xM20 (8-15 mm) + blind
	4: 1xM25 (12.5-20.5 mm) + blind
	VESSEL TYPE
	N: LNG
	P: LPG
	O: Other
	FUNCTION
	0: Level
	1: Level & TOP
	2: CTS
	3: CTS & TOP

GLA-310/5DUAL-□□□□

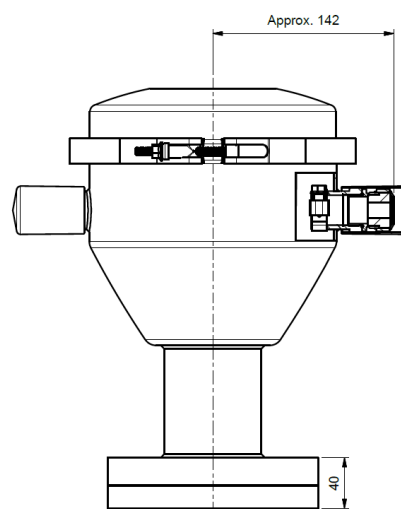
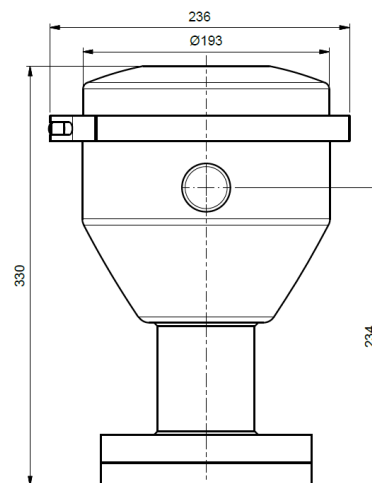


Figure 1: Dimensional sketch of GLA-310/5 DUAL