

## KONGSBERG Radar Tank Gauge for oil, product and chemical tankers

### Features

- Applicable for oil, product and chemical tankers
- Radar RMS accuracy 2 mm
- Half power beam width<sup>1</sup> 6 ° (±3 °)
- Measuring range 0 to 50 m
- Operating temperature -45 to +85 °C
- Environmental protection IP 66/67
- Intrinsically safe Ex ia IIC T4
- No parts in contact with the cargo
- Stainless steel AISI 316L
- Integrated tank pressure transmitter



### General description

GL-300 Tank Monitoring consists of the GLA-300 Radar Tank Gauge (RTG), the GC-300 Cargo Temperature Unit (CTU) and the GLK-300 Signal Processing Unit (SPU). The RTG introduces modern and flexible arrangements for simpler installation. The tank pressure transmitter is fully integrated by means of both mechanics, electronics and cabling. The radar technology provides accurate measurement regardless of the atmospheric conditions inside the tank.

### 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. The distance (i.e. ullage) is derived from the time delay of the reflected signal. The electronic unit in the RTG includes a patented signal detection method that ensures optimum performance.

A frequency sweeping microwave signal is emitted by the RTG, and by aid of the offset parabolic antenna directed vertically down the tank. The high frequency combined with the antenna design gives a very narrow beam width of 6 ° (±3 °).

### Tank pressure transmitter

The GT-450 tank pressure transmitter is fully integrated in the RTG. The only installation work needed is connecting the cable to the terminal block, the rest is performed before delivery.

The GT-450 pressure transmitter is built around a dry, robust ceramic measurement capsule with internal capacitive sensing and with a ratiometric output. The ceramic capsule is "burned in" during the manufacturing, giving a transmitter with very good long term behaviour.

The robust ceramic membrane gives the transmitter well over pressures properties.

### Tank installation

The RTG adapts to a Gauge Socket with inner diameter of 200 mm or larger. The Gauge Socket shall

<sup>1</sup>For details about the free space requirements see the installation manual.

be welded to the top of the tank, preferably as close to the centre of gravity of the tank as possible.

Optional sounding plug requires a Gauge Socket diameter from 400 mm and above. Also if strict cleaning of tank equipment is essential, a larger diameter socket than 200 mm can be used.

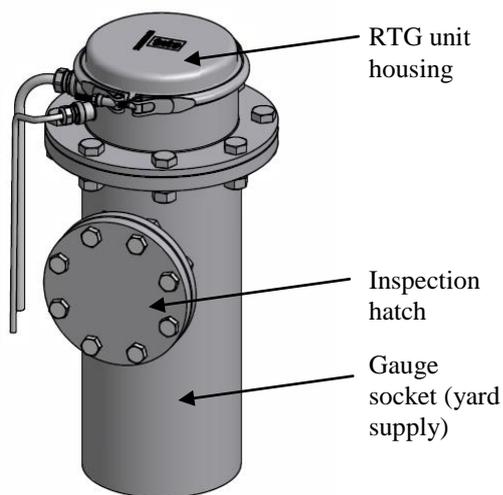


Fig. 1: GLA-300 on an Ø200 mm socket

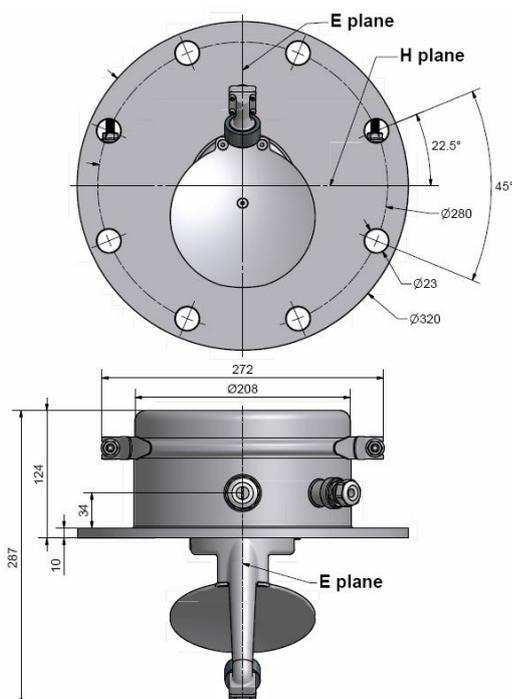


Fig. 2: GLA-300, dimensions

## Specifications

### Radar Tank Gauge

Material: AISI 316L and PTFE  
 Frequency: K-band (24 GHz)  
 Beam width: 6° (± 3°)  
 Measuring range: 0 to 50 metres  
 RMS accuracy: 2 mm

### Tank Pressure Transmitter

Material: AISI 316 and Titanium  
 Measuring range: 0.8 to 1.4 bar  
 (optional 0.8 to 1.8 bar)  
 Accuracy: ± 1.0 % of FRO\* from 20 °C to 85 °C  
 ± 2.5 % of FRO\* from -45 °C to +20 °C

\*FRO = Full Range Output

### Common specification

Cable spec.: 3 x twisted pair common screen  
 Protection: IP66/67  
 Ambient temp.: -45 °C to +85 °C  
 Ex-classification: Ⓢ II 1 G Ex ia IIC T4  
 Ex-certification: CE 0470  
 Nemko 09ATEX1132X  
 Weight: 12 kg  
 EMC Standard: EN50081-1 and EN 50082-2

### Gauge Socket

Material: According to builder specification  
 Diameter: Ø200 mm or larger  
 Flange: JIS: 5K200  
 Height: 500 mm  
 (other lengths upon request)

Inspection hatch has to be mounted in the Gauge Socket

**KONGSBERG MARITIME AS**  
 Trondheim, Norway

**RADAR TANK GAUGE GLA-300**  
 Ser.no. Yr. Nemko 09ATEX1132X  
 CE 0470 Ⓢ II 1 G Ex ia IIC T4  
 U<sub>i</sub>=14.3VDC, P<sub>i</sub>=2.1W, C<sub>i</sub>=347nF, L<sub>i</sub>=0  
 -45°C ≤ T<sub>a</sub> ≤ 85°C

