Cargo Level Radar (FMCW)

- Redundant ullage indication
- Fully stand alone unit with touch screen
- Completely non-contacting to cargo and vapours
- Closed tank cleaning and service of all components
- Designed to operate in extremely rough conditions on ships
Dimensions and weight (DN125 standard flange)

<table>
<thead>
<tr>
<th>Dimensions (mm)</th>
<th>Weight (kg)</th>
<th>Dimensions (inches)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>433</td>
<td>141</td>
<td>170</td>
<td>400</td>
</tr>
<tr>
<td>20</td>
<td>17</td>
<td>5.6</td>
<td>6.7</td>
</tr>
<tr>
<td>16</td>
<td>44</td>
<td></td>
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</table>

Easy installation and light weight

- Small deck socket
- Flange DN125 (ø = 200 mm)
- Total weight: 20 kg

Non contact measurements

The OPTIWAVE 8300 C Marine offers completely non contact level measurements in cargo tanks.

The transmitter is located in the radar head, transmitting through the pressure sealing part.

Radar antennas

Horn antenna:
Standard antenna for most tanker applications.

Drop antenna:
As an alternative to horn antenna we can also offer a solid drop antenna solution. The construction of the drop antenna makes it ideal for sticky/contaminating liquids or dust-laden atmospheres where product build-up inside a horn antenna is likely to occur.
Measuring system

**Measuring principle**
Frequency Modulated Continuous Wave (FMCW), 24 GHz

**Application range**
Level measurement of liquids, pastes, slurries and solids

**Measuring range**
0...40 m / 0-132 ft

**Beam angle**
± 5°

**Measuring accuracy**

<table>
<thead>
<tr>
<th>Accuracy (at reference conditions)</th>
<th>up to 20 m / 66 ft &lt; 2 mm / 0.08”</th>
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<tbody>
<tr>
<td>20...40 m / 66...132 ft m ± 0.01% of distance</td>
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**Repeatability**
≤ 0.5 x error of measurement

**Measured value resolution**
0.1 mm / 0.04”

**Ambient conditions**

**Hazardous locations**
Intrinsically safe, zone 0, 1, 2
Temperature classes: T6...T1
Explosion groups: II A...II C

**Ambient temperature**
-40...+70°C / -40...+160°F [signal converter]

**Flange temperature**
-40...+200°C / -40...+390°F
optional -60...+250°C / -75...+480°F

**Ingress protection**
IP 66/67 [signal converter]

**Product conditions**

**Physical properties**
No effect on measurement results

**Dielectric constant (ε₀)**
< 1.5

**Product limitations**
Liquid ammonia (NH₃), Liquid hydrogen (H₂), Liquid helium (He)

**Process temperature**
Unrestricted (but beware ambient and flange temperatures)

**Materials**

**Signal converter**
Stainless steel 316L

**Flange system / antenna**
Stainless steel 316L (1.4404) [standard]
or 3% Molybden Mo

**Gaskets**
FFM (Viton), Karlez 6375 [others optional]

**Process connection**
DIN 2501 DN 125 / PN 16 [standard]

**Power supply and output**

**Powered by**
4-20 mA

**Protocols**
HART®

**Current output**
4-20 mA passive

**Certificates and approvals**

**Ex approvals**
Intrinsically safe according to ATEX and IEC

**IACS approvals**
DNV, ABS, GL, LR, BV, CCS, NK, RINA, KR
The OPTIWAVE Cargo Level Radar is a highly accurate and reliable instrument for measuring the ullage/level. With its heavy duty stainless steel housing, it is designed to withstand the roughest conditions on deck.

Well protected by a stainless steel cover, it carries a backup display for redundant indication. Loading may continue with a man on deck, if level information is lost on the main monitoring station.

- **Redundant level indication**
  - You will be able to load cargo using only the instrument
  - Touch screen user interface

- **Closed cleaning of radar antenna**
  - Connect cleaning hose to quick coupling on ball valve
  - Tank is closed during all cleaning

- **Closed service**
  - The radar head can be replaced without opening the tank and releasing tank vapours
  - Replacement can be done at any time, even during cargo operations.