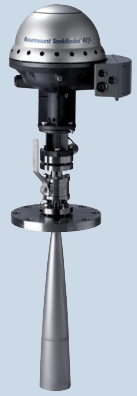
LNG Gauge RTG 3960

BENEFITS

- Highest reliability
- Verification of measurement with closed tank. Non-contact measurement.
- Still-pipe installation of antenna ensuring strong echo even under surface boiling and turbulent conditions
- Operates as primary, secondary, and alarm gauge in our complete LNG management system
- Easy integration to any LTD or LNG management system
- SIL 2 Safety Functions
- TÜV approval

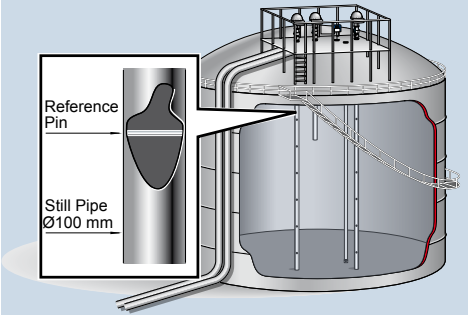


Verification of measurement with closed tank. Non-contact measurement

The RTG 3960 gauge measures the level in Liquefied Natural Gas (LNG) or Liquefied Petroleum Gas (LPG) tanks using a 4-inch still-pipe as a waveguide. It gives high reliability with no moving parts and no contact with the liquid. All electronics are housed in the explosion-proof housing, located outside the tank. Reference devices make it possible to verify measurements without opening the tank - no need for expensive calibration chambers and large-size valves.

The still-pipe ensures a sufficiently strong echo even under surface boiling and turbulent conditions. Low dielectrical constants and long measuring ranges, e.g. high tanks, are standard applications.

The gauge uses state-of-the-art Frequency Modulated Continuous Wave (FMCW) radar technology. The gauge can be equipped with a pressure sensor for measuring vapor pressure.



The reference pin mounted inside the 4-inch still-pipe and a bottom reflection ring enable the measurement to be verified during operation.

High versatility

It has inputs for temperature sensors, HART® based pressure sensors and other analog inputs as well as analog and relay outputs. All data is transmitted on the two-wire TRL/2 field bus. As an option the gauge can be equipped with other output buses such as Foundation™ fieldbus, RS 485, or Whessoe™ bus (Whessmatic™ 660). It can also emulate other vendor's buses when installed in existing tank gauging systems. When redundant communication is required the gauge can communicate via different protocols or buses simultaneously.

Safety

The pressure seal is a quarts window approved for use in pressure vessels up to 25 bars (365 psig). The gauge has an optional fire proof block valve and an optional vapor pressure sensor.

ROSEMOUNT®
Tank Gauging

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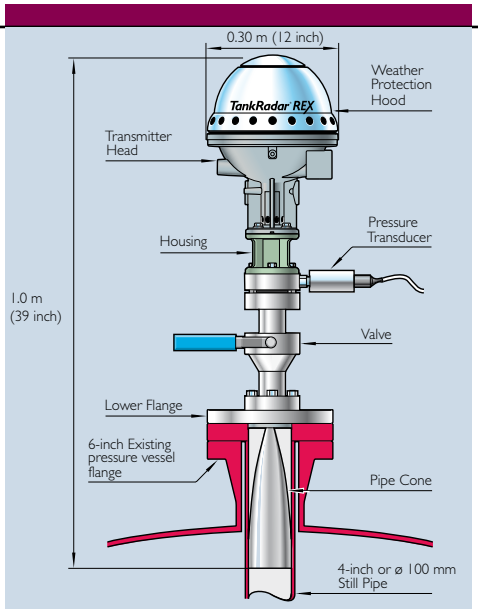

Installation

The gauge consists of two main parts; the exchangeable transmitter head, housing all electronics (installed on top of the tank) and the antenna which is the only part in contact with tank atmosphere.
The gauge fits to a 6-inch flange[1] and requires installation of a customer supplied still-pipe. In order to verify measurements in the pressurized tank, a reference pin is installed in a still-pipe hole at the top, and a deflection plate with reflection ring is installed at the bottom.

Safety functions

TankRadar Rex could replace a traditional Hi-Hi alarm device. With the RTG 3960 it is possible to use the gauge for overfill protection and/or simultaneously use it for high accuracy level measurement.
The Rosemount Tankradar Rex (RTG 3900 Series) has been assessed by third party and considered suitable for use in SIL 2 safety functions according to IEC 61508/61511. The decision on the usage of proven-in-use devices, however, is always with the end-user. The safety function is based on the relay outputs, by using either one or a combination of two, for overfill or dry run protection.
TankRadar Rex is approved as an overfill protection device by TÜV (Technische Überwachungsverein)[2].

Specification	
Measuring principle	FMCW radar with digital reference and temperature control.
Antenna type	High precision cone.
Instrument accuracy	± 0,5 mm (± 5/256 in.)
Measuring range	0,5 to 40 m (0 to 130 ft), 100 m (330 ft) optional.
Temperature	Ambient temperature -40° C to +70° C (-40° F to +158° F) Operating temperature at ball valve: -55° C to 90° C (-67° F to 194° F) Operating temperature in tank: -170° C to 90° C (-274° F to 194° F)
Pressure	Up to 25 bar (365 psig).
Material exposed to tank atmosphere	Acid proof steel EN 1.4436 (AISI 316) and quartz.
Supply voltage	100-240 VAC, 50-60 Hz. Optional 34-70 VAC, 20-28 VDC (max 30 W) or 48-99 VDC.
Outputs/inputs	Outputs: TRL/2 field bus, 1 pc 4-20 mA, RS 485, Foundation Fieldbus™, Whessoe™ bus (Whessmatic™ 660), 2 pcs relays, other vendor's field buses. Inputs: Temperature (Pt 100), 2 pcs 4-20 mA (of which one HART® Master).
Display	On separate DAU, RDU or remotely in control room.
Still-pipe dimensions and flange	4-in (Sch 10 or Sch 40) or 100 mm inner diameter stainless steel. 6-in flange.
Housing	Aluminium, designed for IP 66 & 67.
Weight	150/300 psi: 38 kg (84 lbs)/48 kg (106 lbs).
Hazardous locations certifications	ATEX: CE 0575 Ex II 1/2 G CENELEC: EEx d[ia] IIB T6 UL: Class 1, Div 1, Groups C and D. IECEx d IIB T6 (T_{amb} -40° C to +60° C)

Technical details are subject to change without prior notice. For more technical details see the Rex Technical Description.
Whessoe and Whessmatic 660 are trademarks of Whessoe and Endress & Hauser (International) Holding AG.
HART® is a registered trademark of the HART Communication Foundation. FOUNDATION is a trademark of the Fieldbus Foundation.
1. Available options are suitable for installations on 4 and 8-in. flanges.
2. TÜV is a German testing authority responsible for testing overfill protection equipment according to requirements stated by the German WHG institute concernnig water protection.

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