

FMR60 Radar Tank Gauge

Smart 80 GHz radar tank gauge for continuous and non-contact level measurement with an accuracy rate of ± 1 mm

Highlights

- 2-wire technology: Reduces on tank wiring costs and allows easy implementation into existing systems.
- Non-contact measurement: Tank top is almost independent from product properties.
- 2"/50 mm PTFE drip-off antenna.
- Standard range to 164 ft (50 m).
- Easy onsite operation using built-in touch control display without opening enclosure (or optional push button display with cover removed).
- Access historic data from device integrated memory (HistoROM) and transfer configuration setting from device to device.
- Easy commissioning and diagnostics using Windows® based software.
- HART protocol.
- High temperatures: Suitable for process temperatures from -40°C (-40°F), up to 130°C (266°F) with high-temperature antenna.
- Pressure: -1 to $+16$ bar (-14.5 to $+232$ psi)
- Approved for use in explosive hazardous locations.
- Optional: Integrated over voltage protection.
- SIL 2 approved for overspill protection system applications or SIL 3 for standalone applications.
- Optional remote display (FHX50).
- **Bluetooth®** wireless technology for commissioning, operation, and maintenance via free iOS/Android app SmartBlue, with optional BT10 Bluetooth module

Varec®



Product Options

Approvals & Certifications

- FM, CSA, ATEX, IECEx, NEPSi, KC, INMETRO, JPN, and TIIS

Antenna & Seals

- Drip-off, PTFE 50mm/2" antenna
- Seal: FKM Viton GLT ($-40...80^{\circ}\text{C}$ / $-40...176^{\circ}\text{F}$ or $-40...130^{\circ}\text{C}$ / $40...266^{\circ}\text{F}$) and EPDM ($-40...130^{\circ}\text{C}$ / $-40...266^{\circ}\text{F}$)

Process Connections

- Threaded ISO0228 G1-1/2", 316L
- Thread ANSI MNPT1-1/2", 316L
- PP or 316L - UNI flange 3"/DN80/80, max 4bar abs/58psia, suitable for NPS 3" CI.150/DN80 PN16/10K 80
- PP or 316L - UNI flange 4"/DN100/100, max 4bar abs/58psia, suitable for NPS 4" CI.150/DN100 PN16/10K 100
- PP or 316L - UNI flange 6"/DN150/150, max 4bar abs/58psia, suitable for NPS 6" CI.150/DN150 PN16/10K 150

Output Options

- HART

Gland Entry

- Metric, NPT, G

Languages

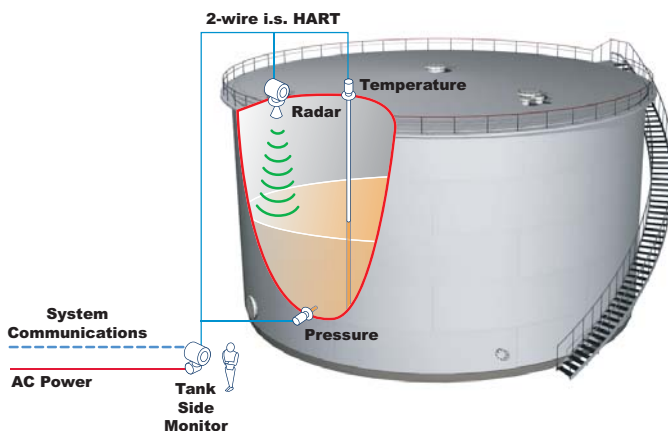
- Over 15 national languages available

Technical Specifications

Note! This product conforms to all applicable industry standards and approvals, such as climate class, electromagnetic (EMC), vibration and radio frequency (RF). See product installation manual.

Note! These specifications apply to the FMR60 under reference operating conditions (DIN EN IEC 61298-2 / DIN EN IEC 60770-1) with no major interference reflections inside the signal beam.

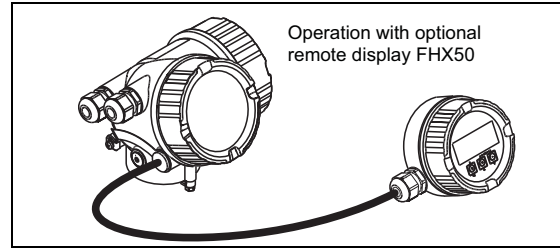
- Temperature = $+24^{\circ}\text{C}$ ($+75^{\circ}\text{F}$) $\pm 5^{\circ}\text{F}$ ($\pm 9^{\circ}\text{C}$)
- Pressure = 960 mbar abs. (14 psia) ± 100 mbar (± 1.45 psi)
- Humidity = 60% $\pm 15\%$
- Reflector: metal plate with a minimum diameter of 1 m (40 in)
- No major interference reflections inside the signal beam



Example tank gauging system using the 4590 Tank Side Monitor and NMT532/ NMT539 Average Temperature Converter

Reference Accuracy	Measuring distance up to 0.8 m (2.62 ft): max. ± 4 mm (± 0.16 in) - digital, $\pm 0.03\%$ analog Measuring distance > 0.8 m (2.62 ft): ± 1 mm (± 0.04 in), digital, $\pm 0.02\%$ analog Non-repeatability - ≤ 1 mm (0.04 in)
Power Consumption	<ul style="list-style-type: none"> 2-wire; 4-20mA HART: < 0.9 W 2-wire; 4-20mA HART, switch output: < 0.9 W 2-wire; 4-20mA HART, 4-20mA: < 2 x 0.7 W
Current Consumption	HART: Nominal current: 3.6 to 22mA. The start-up current for multidrop mode can be parametrized (is set to 3.6mA on delivery) Breakdown signal (NAMUR NE43): adjustable: 3.59 to 22.5mA
Weight	3.2 - 3.9 kg (7.11 - 8.61 lb) plus flange weight
Enclosure	Degree of protection: <ul style="list-style-type: none"> With closed housing tested according to: <ul style="list-style-type: none"> IP68, NEMA6P (24 h at 1.83 m under water surface) For plastic housing with transparent cover (display module): IP68 (24h at 1.00 m under water surface) IP66, NEMA4X With open housing: IP20, NEMA1 Display module: IP22, NEMA2 Housing GT19: plastic Housing GT20: aluminium, seawater repellent, powder coated
Antenna	IP 68 (NEMA 6P)
Conduit Entries	Gland M20; Material dependent on the approval: <ul style="list-style-type: none"> For Non-Ex, ATEX, IECEx, NEPSI Ex ia/ic: Plastics M20x1.5 for cable $\varnothing 5$ to 10 mm (0.2 to 0.39 in) For Dust-Ex, FM IS, CSA IS, CSA GP, Ex nA: Metal M20x1.5 for cable $\varnothing 7$ to 10 mm (0.28 to 0.39 in) 1) For Ex d: No gland available Thread <ul style="list-style-type: none"> $\frac{1}{2}$" NPT G $\frac{1}{2}$" M20 x 1.5 Plug M12 / Plug 7/8" Only available for Non-Ex, Ex ic, Ex ia
Ambient Temperature	Unit: -40 °F and +176 °F (-40 °C and +80 °C) Display: -4 °F and +158 °F (-20 °C and +70 °C)
Operating Frequency	Approx. 80 GHz, up to 8 devices can be installed in the same tank
Dielectric Constants	A0 - 1.2 to 1.4 - Butane, liquid nitrogen, liquefied hydrogen A - 1.4 to 1.9 - non-conducting liquids, e.g. liquefied gas B - 1.9 to 4 - non-conducting liquids, e.g. benzene, oil, toluene, etc... C - 4 to 10 - e.g. concentrated acids, organic solvents, esters, aniline, alcohol, acetone, etc... D - > 10 - conducting liquids, e.g. aqueous solutions, dilute acids, and alkalis
Hygienic Approvals	CoC-ASME BPE

Note! Please complete an Application Data Sheet for this equipment to facilitate proper selection of options for your unique application. Contact your Varec Sales Representative for more information.



Dimensions

Note! Aluminum housing shown with example antenna (not all possible configurations shown).

