

# Radar measurement Time-of-Flight Micropilot FMR51

The standard sensor for highest demands in liquid level measurement



## Benefits:

- Hardware and software developed according to IEC 61508 up to SIL3 (in homogeneous redundancy)
- HistoROM data management concept for fast and easy commissioning, maintenance and diagnostics
- Highest reliability even in the presence of obstructions in the vessel due to new Multi-Echo Tracking evaluation
- Heartbeat Technology for a cost-effective and safe plant operation during the entire life cycle
- Seamless integration into control or asset management systems and intuitive, menu-guided operation concept (on-site or via the control system)
- World's easiest proof test concept for SIL and WHG saves time and cost
- Highest safety due to double ceramic coupling and gas-tight feedthrough

More information and current pricing:

[www.endress.com/FMR51](http://www.endress.com/FMR51)

## Specs at a glance

- **Accuracy** +/- 2 mm (0.08 in)
- **Process temperature** XT: -196...+280 °C (-321...+536 °F) HT: -196...+450 °C (-321...+842 °F)
- **Process pressure / max. overpressure limit** Vacuum...160 bar (Vacuum...2320 psi)
- **Max. measurement distance** Standard: 40 m (131 ft) With "Advanced dynamics": 70 m (230 ft)
- **Main wetted parts** 316L, Alloy C, PTFE, ceramic

**Field of application:** Micropilot FMR51 for level measurement even under extreme process conditions like high temperature and high pressure in the oil & gas and chemical industry. The FMR51 free space radar offers maximum reliability due to an innovative and patented sensor-design. Micropilot is used for continuous, non-contact level measurement of liquids, pastes and slurries. The measurement is not affected by changing media, temperature changes, gas blankets or vapors. Remote access via SmartBlue app is available.

## Features and specifications

### Continuous / Liquids

#### Measuring principle

Level radar

#### Characteristic / Application

Premium device for continuous non-contact level measurement of liquids, pastes and slurries even under extreme process conditions;  
Horn antenna: 40...100 mm

#### Specialities

Heartbeat Technology,  
SIL 2 according to IEC 61508,  
Bluetooth® commissioning,  
Operation and maintenance SmartBlue App,  
Safety and reliability with Multi-Echo Tracking,  
HistoROM,  
RFID TAG for easy identification

#### Supply / Communication

2-wire (HART / PROFIBUS PA/ FOUNDATION Fieldbus)  
4-wire (HART)  
Bluetooth® wireless technology and App (optional)

#### Frequency

K-band (~26 GHz)

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**Continuous / Liquids****Accuracy**

+/- 2 mm (0.08 in)

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**Ambient temperature**

-50...+80 °C  
(-58...+176 °F)

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**Process temperature**

XT: -196...+280 °C  
(-321...+536 °F)  
HT: -196...+450 °C  
(-321...+842 °F)

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**Process pressure / max. overpressure limit**

Vacuum...160 bar  
(Vacuum...2320 psi)

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**Main wetted parts**

316L, Alloy C, PTFE, ceramic

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**Process connection**

Thread:  
MNPT 1 1/2, R 1 1/2  
Flange:  
DN50...DN150,  
ASME 2"...6",  
JIS 10K, 63K

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**Process connection hygienic**

Tri-Clamp ISO2852

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**Max. measurement distance**

Standard: 40 m (131 ft)  
With "Advanced dynamics": 70 m (230 ft)

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**Continuous / Liquids****Communication**

4...20 mA HART  
PROFIBUS PA  
FOUNDATION Fieldbus  
Bluetooth® wireless technology

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**Certificates / Approvals**

ATEX, FM, CSA C/US, IEC Ex, JPN Ex, INMETRO, NEPSI, KC, EAC, UK Ex

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**Safety approvals**

Overfill protection WHG  
SIL

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**Design approvals**

EN 10204-3.1  
NACE MR0175, MR0103  
ASME B31.3  
AD2000

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**Marine approval**

GL/ ABS/ LR/ BV/ DNV

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**Options**

Display,  
Customized parameterization,  
Remote operation via SmartBlue App using Bluetooth®,  
Gas-tight feed through,  
Antenna Extension,  
PWIS free

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## Continuous / Liquids

### **Application limits**

Maximum measuring range is dependent on the tank form and/or application

Ammoniacal gas phase:

FMR54 in stilling well

Strong build- up formation:

FMR54 with air purge

316L or Alloy C non-resistant:

FMR50, FMR52, FMR53

Hygiene requirements:

FMR52, FMR53

Custody transfer measurement:

FMR5xx

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More information [www.endress.com/FMR51](http://www.endress.com/FMR51)