GF Piping Systems

# The Direct Line to Your Tank Level

## Guided radar level transmitter type 2291

Pressure | Temperature | Fumes | Foaming[1] & Agitation

With its ability to read accurately when other non-contacting or invasive methods fail, the guided level transmitter type 2291 using GWR (guided wave radar) is the solution to your level needs. The radar signal is sent down the probe assembly eliminating the interferences caused by low dielectric liquids, heavy fuming, slightly conductive foams, internal tank obstructions, etc. By focusing its energy along the probe, the type 2291 can be installed in tanks with limited space. The type 2291 is also less sensitive to turbulence that would normally upset the readings in ultrasonic and unguided radar technologies.

## Applications

- **General** – Challenging tank applications where other non-contacting principles fail e.g. ultrasonic or unguided radar
- **Chemical Process Industry** – Storage of solvents, chlorine or ammonia, level detection in reaction vessels or buffer tanks
- **Water Treatment** – Pumping stations, sludge handling, drain level monitoring, drinking water conditioning vessels

### Process liquids

- For most non-coating liquids, including flammable[2] and fuming fluids
- Suitable for hydrocarbons, acids and aggressive media
- Liquids which tend to foam e.g. in acid neutralization

### Tanks

- Bulk storage tanks
- Day tanks
- Process vessels for mixing and batching
- Plastic or metal

## Benefits

- Most robust technology to detect filling level
- Direct contact to the process liquid assures even more reliable measurement even in most challenging conditions
- Easy setup, configuration and trimming of the probes onsite[3]
- Adaptable thanks to smart setting options

## Features

- Guided wave radar (GWR)
- Stainless steel rods and rope
- Coated probes available in FEP, PFA or PP[4]
- 2 wire transmitter
- Large graphical LCD display
- ATEX & IECEx options

### Approvals

[1] Application-dependent
[2] See EX approvals at specification on next page
[3] Non-coated probes only
[4] Custom-built. Please contact GF for more information

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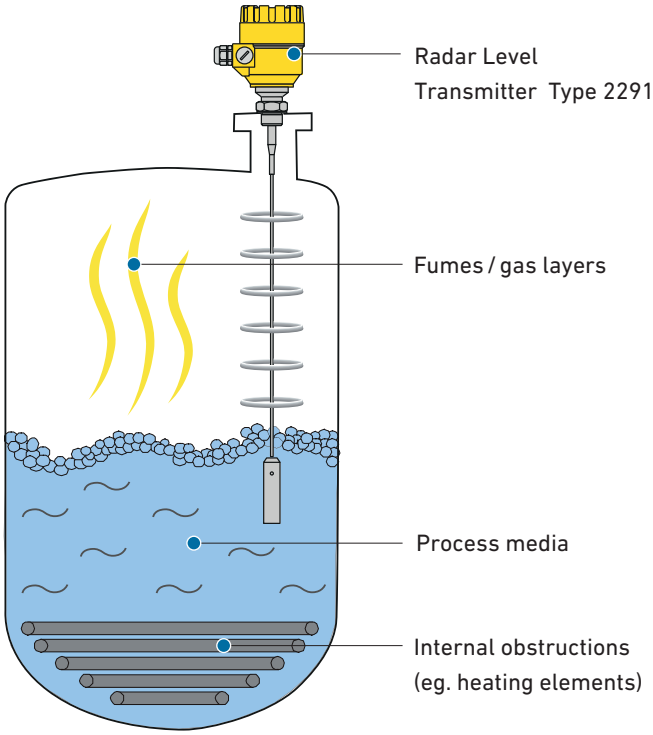
# Technical features

## Principle

The GWR type 2291 is mounted on top of a tank vessel and its probe extends to the full depth of the tank. Microwave pulses are sent along the probe at the speed of light. On the surface of the filling a portion of the energy is reflected back to the transmitter. The time delay between transmitting waves and receiving their reflection provides a distance domain value – Distance = (Speed of light x time delay) / 2. Additional tank details allow calculations of volume and mass.




## Specifications

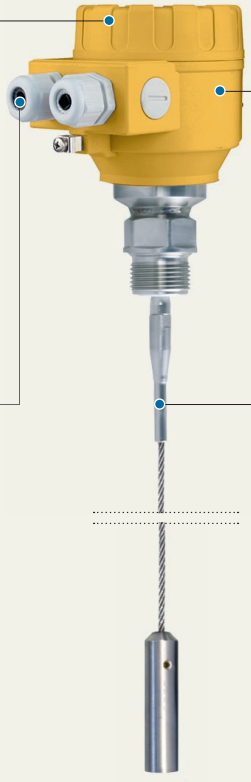
| | |
|---|---|
| **Measured values** | Level, Distance;<br>Calculated dimensions: Volume, Mass |
| **Measuring range** | 0.3 m - 6 m (11.8 inch - 236.2 inch)<br>(process liquid) |
| **Resolution** | 1 mm (0.04 inch) |
| **Power supply voltage** | 20 V ...35 V DC, 24 V DC nominal |
| **Probe details** | 6m (236.2 inch) rope ø 4mm (0.16 inch),<br>SS316/DIN 1.4571;<br>2m (78.7 inch) rod ø 8mm (0.31 inch) |
| **Process connection** | 1" BSP, 1" NPT |
| **EX approvals** | ATEX (ia): II 1/2 G Ex ia IIB T6...T5 Ga/Gb,<br>ICEX (ia): EX ia IIB T6...T5 Ga/Gb |
| **Accuracy** | +/- 5mm (0.2 inch),<br>+/- 0.05% of probe length |
| **Sensing space around probe** | ø 600mm (23.6 inch) |

## Display

- 64 x 128 dot matrix LCD plugin display
- Comprehensive, text based configuration menu
- Graphical illustration of reflection bar graph to ease onsite setup

## Outputs

2 wire 4-20mA /
HART Communication Protocol



## Housing

PBT plastic housing IP67

## Wetted part

**Cable**

- SS316, DIN1.4571
- FEP coating[4]

**Optional: rod**

- SS316, DIN1.4571
- PFA or PP coating[4]

Radar level transmitter is also available as
**Non-contact radar level transmitter type 2290**

[4] Custom-built. Please contact GF for more information

**Your contact**
Georg Fischer Piping Systems Ltd
Ebnatstrasse 111
8201 Schaffhausen
Switzerland
www.gfps.com

**www.gfps.com/level**



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