

TDR level sensor TS-KFA 2

Guided radar
Continuous liquid level monitoring



Coaxial probe

Application

This measurement method provides a direct, precise and extremely reliable continuous fill and limit level measurement in almost every media – independent of variable process conditions (e. g. density, conductance, temperature, pressure, moisture and dust) The sensor can be used equally well in small tanks, large storage silos or small or large nozzles.

Description

- Fast response time of 0,5 s
- Combined precise fill and reliable limit level measurement in one device
- Suitable for liquids and powdery substances
- Fixtures inside the tank do not effect the measurement results
- Unique price-performance ratio

Microwave pulses are guided along a conductive probe which is immersed directly into the medium to be measured. If the pulses impact at the surface of liquid or powdery substances parts of the pulse energy are reflected back along the probe. The media level is calculated from the time difference between the pulse sent and the reflected pulse.

The sensor provides the fill level as a continuous measurement value via the analog output or converts the value into a freely positionable switching output signal. TDR is the abbreviation of the measurement method "Time Domain Reflectometry".

Technical data	Type: TS-KFA 2	
Accuracy	± 3 mm or 0.03 % of range*	
Repeatability	< 2 mm*	
Resolution	< 1 mm* °C	
Ambient temperature	-25 ... +80 °C	
Media temperature	Single-pin probe / rope-type probe	-40 ... +150 °C
	Coaxial probe with EPDM seal	-40 ... +130 °C
	Coaxial probe with FKM (Viton) seal	-15 ... +150 °C
Process connection	Thread G 3/4" male, 3/4" NPT (wrench size 32 mm)	
Operating voltage U _B	12 ... 32 V DC (reverse polarity protected)	
Outputs	Analog output 4 ... 20 mA (active) Switching output DC PNP (active)	
Material of parts with contact to measuring medium	Single-pin probe	1.4404 / 316L, Peek, Ø 6 mm
	Rope-type probe	1.4404 / 316L, Peek, Ø 4 mm
	Coaxial probe	1.4404 / 316L, Peek, Ø 17,2 mm
	Seals	EPDM or FKM (Viton)
IP protection class	IP 68, NEMA6P (Housing)	
ATEX certification	II 1/2G Ex ia/d IIC T6 Ga/Gb ; II 1/2D Ex ia/t IIIC T86°C Da/Db ; II 2G Ex ia d IIC T6 Gb ; II 2D Ex ia t IIIC T86°C Db	

Measuring ranges	
Type	Measuring ranges
KFA2 single-pin probe	100 ... 3.000 mm
KFA2 rope-type probe	100 ... 20.000 mm
KFA2 coaxial probe	100 ... 6.000 mm

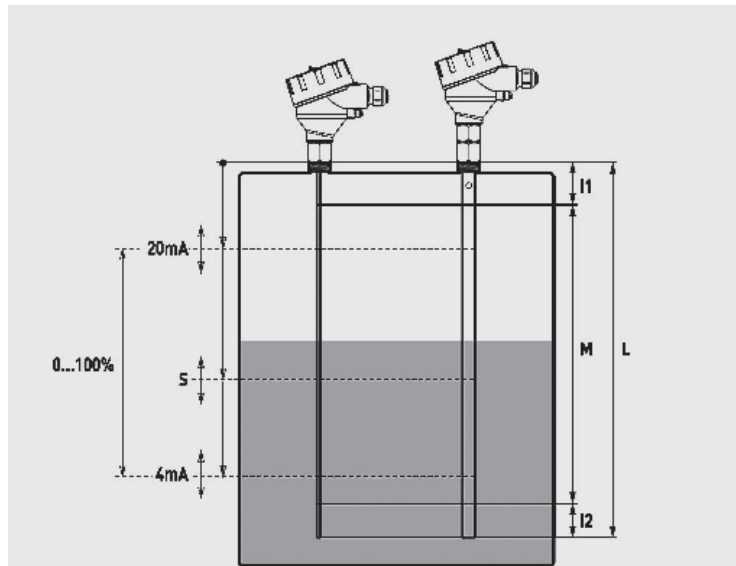
* Reference conditions: dielectric constant $\epsilon_r=80$, water surface, tank Ø 1 m, DN200 metal flange

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Probe length and measuring range

- Modular probe construction. Probe types can be adjusted to individual requirements without the need for special tools at any time
- Sensor inputs and outputs and container potential are completely galvanically isolated from the device electronics. (no electrochemical corrosion problems possible)
- Extremely reliable measurement due to 4-wire layout, innovative signal analysis and desensitizing



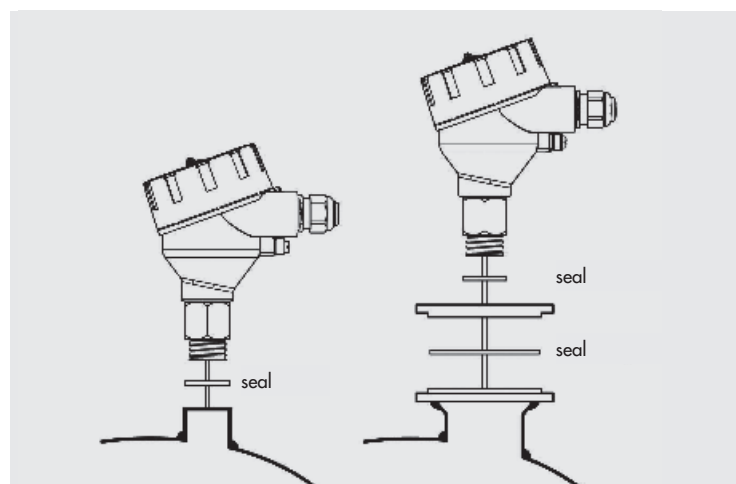
single-pin / rope-type probe coaxial probe

L1: inactive range	single-pin / rope-type probe	: 50 ... 80 mm*
	coaxial probe	: 30 ... 50 mm*
L2: inactive range	all probe types	: 10 ... 50 mm*
M: measuring range		
L: probe length		
S: switching point		

* depending on the dielectric constant ϵ_r of the fluid 2 ... 80

Mounting

- There are almost no practical mounting restrictions for this sensor.
- Measurement is always very precise due to the guided microwave technology. Even difficult tank shapes and geometries or measuring next to disturbing influences, e. g. tank walls will not cause problems.
- Ideally the sensor can be mounted inside of bypass chambers or surge pipes.



threaded mounting

flange mounting on tank stub

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PTFE
flange probe



High temperature
single-pin probe



High temperature
coaxial probe



Rope type



Single-pin probe



PTFE
single-pin probe

Level