



PROCESS AUTOMATION

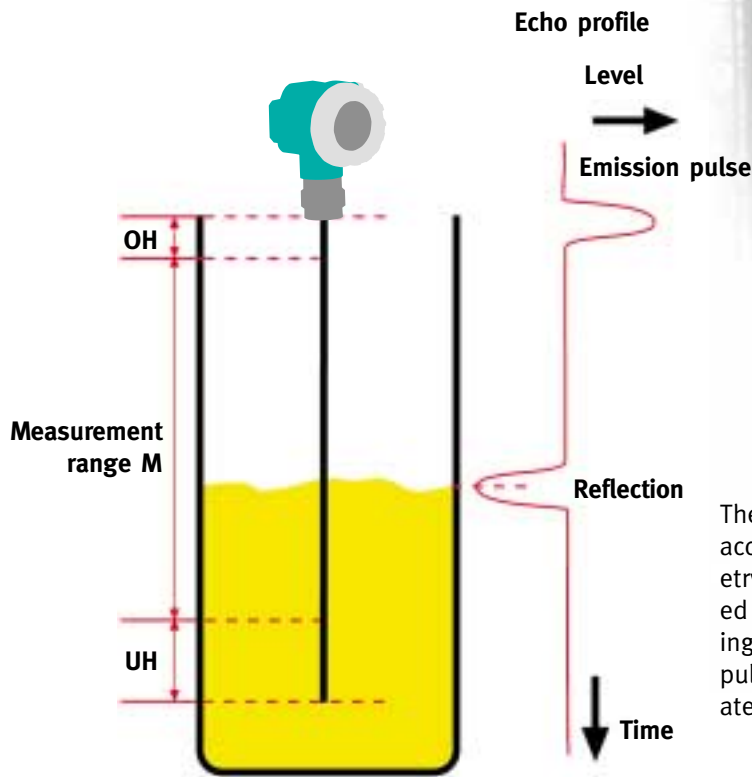
GUIDED MICROWAVE FOR

CONTINUOUS LEVEL MEASUREMENT

Pulscon



SIMPLE, INDEPENDENT, VERSATILE – CONTINUOUS LEVEL MEASUREMENT WITH LATEST MICROWAVE TECHNOLOGY



The new 2-wire transmitter of Pepperl+Fuchs works according to the TDR principle (time domain reflectometry). The run time of a conducted pulse that is reflected on a media surface is evaluated. To do this, repeating pulses are emitted at an interval of one μs with pulse widths in the ns range. The echo profile is evaluated by time-offset sampling.

Stones

Technical features

- Designs in rod, cable and coax version for all media with measurement ranges from 0.3 m ... 35 m
- Significantly less sensitivity against tank fixtures/narrow tank diameters compared to free radar devices
- Accuracy: 0.1 % of the maximum measurement range
- Because of the low power draw and very minimal pulse power the sensor (Ex ia design) can be used in an Ex-atmosphere up to Zone 0



Soil

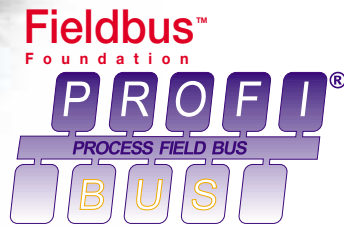
Chemical



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Modularity

- Process connections
- Rod, cable and coax probes
- Electrical interfaces/configuration:
 - 4 mA ... 20 mA HART/**PACTware**
 - PROFIBUS PA/**PACTware**
 - Foundation Fieldbus



Advantages

- Menu guidance system and factory calibration make commissioning easy
- Reliable measurement of powdered media even during filling
- Measurement in liquids even with foam or media build-up
- Reliable and accurate measurement in bypass or surge tube
- Practically no interference reflection from installed fixtures (e. g. braces), structured container walls (e. g. corrugated sheet) or narrow silo cells

Independence

Media properties

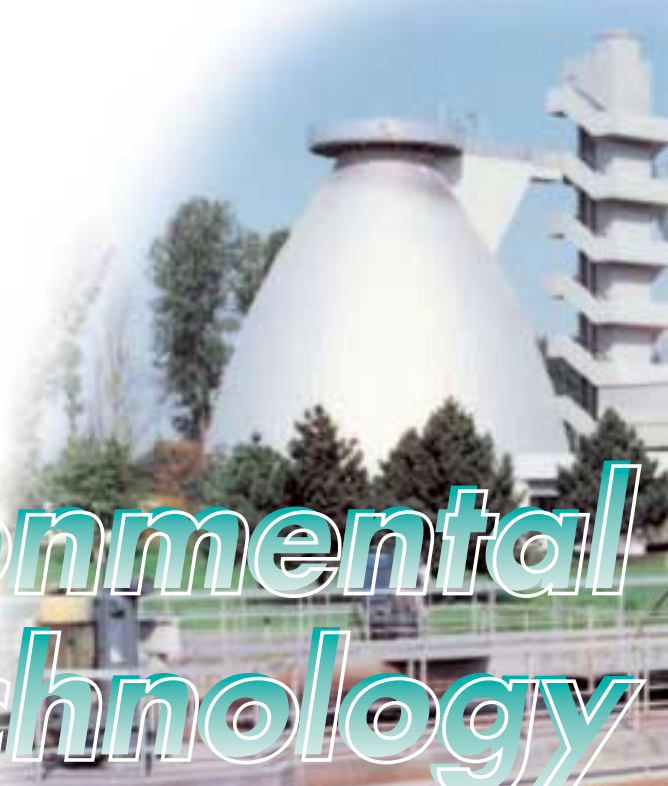
- Liquids/bulk materials
- Density
- DK value
- Chemical aggressiveness
- Conductivity
- Caking

Largely independent of process influences

- Pressure
- Temperature
- Moving surfaces
- Foam/mist/dust



Environmental technology



TECHNICAL DATA

TYPECODE

For measurement	in bulk materials cable probe 4 mm or 6 mm
Measurement range	1 m ... 35 m
Pressure	vacuum ... 40 bar
Temperature in process	-40 °C ... +150 °C
Ambient	-40 °C ... +80 °C
Process connection	G1½" u. NPT1½", flange from DN40/ANSI2"
Materials in process	1.4401
Seal material	silicone rubber
Tensile load capacity	4 mm cable: 15 kN
Min. required dielectric constant	1.6
Viscosity	./.
Grain size	max ca. 20 mm
Measurement accuracy	± 10 mm
Power supply optional:	
2-wire	standard: 16 V ... 36 V, Ex is: 16 V ... 30 V
4-wire	AC: 85 V ... 250 V, 50/60 Hz; DC: 10,8 V ... 36 V
Output	4 mA ... 20 mA/HART (2-wire + 4-wire) PROFIBUS PA Foundation Fieldbus

For measurement	in liquids rod or coax probe
Measurement range	0.3 m ... 4 m
Temperature in process	-40 °C ... +150 °C
Ambient	-40 °C ... +80 °C
Process connection	threading from G ¾", NPT ¾", flange from DN40/ANSI2"
Materials in process	1.4435
Seal material	O rings: alternative: Viton, EPDM, Kalrez
Tensile load capacity	./.
Min. required dielectric constant	rod probe 1.6; coax probe 1.4
Viscosity	rod probe: 1000 cst, coax probe 1½":500 cst, coax probe ¾": 100 cst
grain size	./.
Measurement accuracy	± 5 mm
Power supply optional:	
2-wire	standard: 16 V ... 36 V, Ex is: 16 V ... 30 V
4-wire	AC: 85 V ... 250 V, 50/60 Hz; DC: 10,8 V ... 36 V
Output	4 mA ... 20 mA/HART (2-wire and 4-wire) PROFIBUS PA Foundation Fieldbus

Probe design

- 1 4 mm/½" cable probe 1.4401/316
- 2 rod probe 1.4435/316L
- 3 probe, 6 mm short block distance 1.4435/316L
- 4 coax probe 1.4435/316L

Process connection

- N21** ¾" NPT screw-in piece
G21 G ¾ screw-in piece ISO 228 1.4435
N51 1 ½" NPT screw-in piece 316L
G51 G 1 ½ screw-in piece ISO 228 1.4435
D65 DN 40 PN40 FormC 316L
D75 DN 50 PN40 FormD 316L
A52 ANSI 1 ½" 300 lbs RF 316L
xxx special version

Probe length

- Cable probes** 1000 mm ... 20.000 mm/39 in ... 787 in
A 4 mm cable 1.4401
C in ½" cable 316
Rod probes 300 mm ... 4.000 mm/11 in ... 157 in
K mm rod 1.4435/316L
L mm coax probe 1.4435/316L
M in (0.1 in) rod 1.4435/316L
N in (0.1 in) coax probe 1.4435/316L

Seal

- 1 VITON O ring
- 2 EPDM O ring
- 3 KALREZ O ring

Housing

- A1** Alu housing IP68, M20 x 1.5 screw piece
- A2** Alu housing IP68, NPT ½" introduction
- A3** Alu housing G1½" introduction
- A4** Alu housing M12 PROFIBUS PA connector
- A5** Alu housing ¾" FF connector

Electrical output

- IH** 2-wire, 4 mA ... 20 mA HART
PA 2-wire, PROFIBUS PA
FF 2-wire, Foundation Fieldbus
AH 4-wire, 9 V AC ... 250 V AC, 4 mA ... 20 mA HART
DH 4-wire, 18 V AC ... 36 V AC, 4 mA ... 20 mA HART

Display

- B** without display
D with display incl. preparation

Offset electronics

- 1 standard compact device
- 2 spacing tube 400 mm for electronics
- 3 offset electronics, 3 m cable

Certificates

- NA** version for non-explosive area
FM FM DIP, Cl. II Div. 1 Gr. E-G N.I.
CG CSA General Purpose
CS CSA DIP Cl. II Div. 1 Gr. G+coal dust, N.I.
EX ATEX II ½ G EEx ia IIC T6
SX ATEX II ½ D Alu-cover, St.-Ex
ES ATEX II ½ G, II ½ D EEx ia IIC T6
WH overspill protection

L T C 3 - G51 A 1 - A1 IH D 1 - NA

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