

To be discontinued in 2012

GENERAL DESCRIPTION

PiloTREK being an FMCW (frequency modulated continuous wave) type radar level gauge offers the highest standard of non-contact level metering technology for liquids and solids without any compromise in the performance with an accuracy also suitable for Custody transfer measurement. The four models range from the 2-wire low cost to the 4-wire high precision version. Their horn antenna or Wave-Stick come with a wide variety of materials, while the most different sealings provide the chance of the proper choice for any application. The FMCW radar uses high frequency wave of 8.5 GHz with a 1 GHz frequency sweep for the measurement. A wave is emitted by the antenna and received with a time delay depending on the distance of the measured surface. The lower frequency of the emitted wave is compared with the frequency generated at the time the reflected wave reaches the antenna. The frequency difference Δf is a basic variable for distance calculation. The mix signal of two frequencies is transformed via a Fast Fourier Transformation (FFT) into a frequency spectrum from which distance and level is calculated. The unique TBF and partial TBF method provides for reliable measurement even with very low relative dielectric constants between 1.05 and 4 when the waves reflected from the surface of the medium are very weak. TBF (tank bottom following) method uses the electromagnetic waves going through the medium.

MAIN FEATURES

- Measurement is not influenced by dielectric constant, temperature, pressure and density variations
- Accuracy up to ± 1 mm
- Measuring range up to 20 m
- Flange temperature up to 250 °C
- Medium temperature -30 °C ... +130 °C
- Pressure up to 40 bar
- HART, Profibus PA, FF, RS485
- Ex version
- IP 66/67 protection

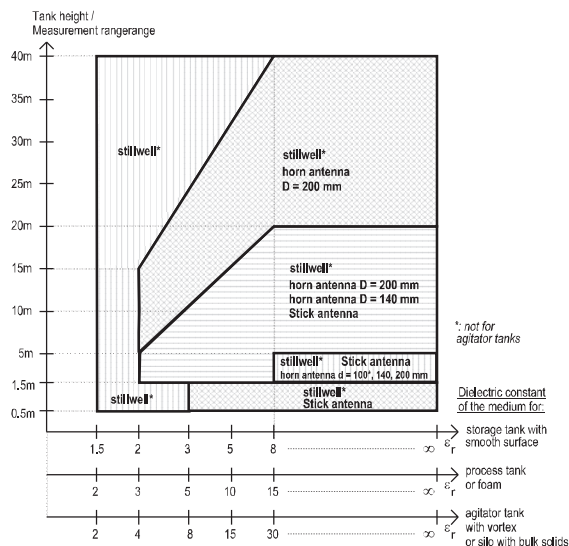
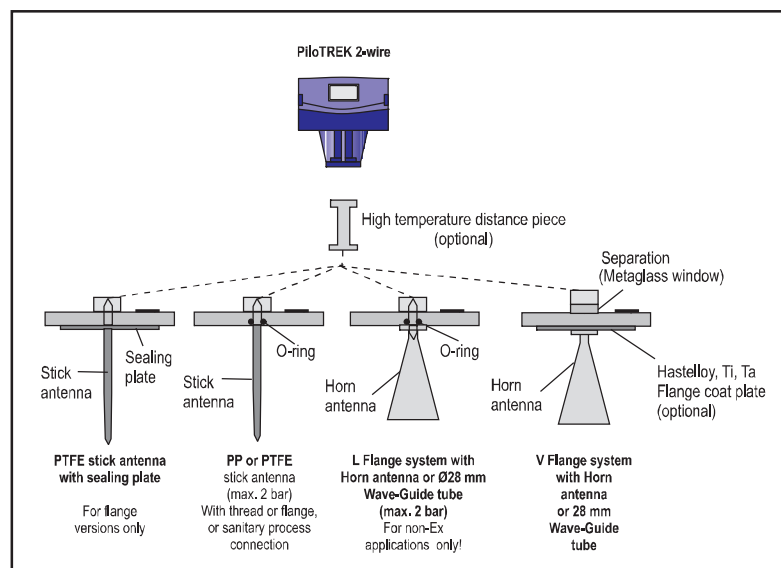
APPLICATIONS

- Non-contact level transmitter for liquids and solids
- Tank bottom following (TBF) feature for mediums with low dielectric constant
- Level- and volume measurement
- In arbitrary shaped and placed tanks

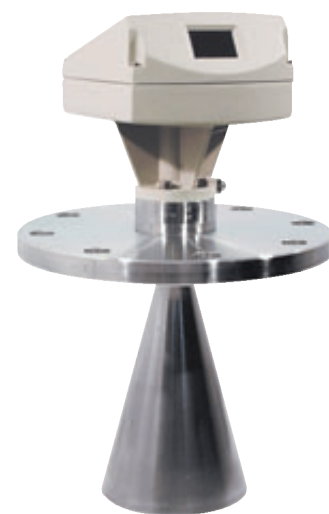
CERTIFICATIONS

- ATEX II 1/2 G EEx ia IIC T6

THE MODULAR SYSTEM OF PILOTREK




PiloTREK stick type antenna



PiloTREK horn type antenna

TECHNICAL DATA

Type		PiloTREK 2-wire
Special features		Empty tank spectrum recording, Partial or Full TBF mode, Low cost L flange system
Measurement Range		max. 20 m
Min. top block distance	Horn	For storage tanks: antenna extension + antenna length + 100 mm, for process tanks: additional +100 mm
	Wave-Stick	Wave-Stick length – 200 mm
	Still-Well	Antenna extension + antenna length + 300 mm
Error of measurement		Range <5 m: ± 10 mm Range >5 m: $\pm 0.2\%$
Analogue output		4 ... 20 mA
Communication		HART
Power supply		17 ... 35 V DC ; For Ex ia application: intrinsically safe power supply is required
Flange temperature (with heating device or temperature adapter)		Horn: -30 °C (-60 °C) +130 °C (+250 °C); PP Stick: -20 ... +100 °C; PTFE Stick: -40 °C +130 °C (+150 °C); with L flange system: -20 °C +130 °C
Ambient temperature		-20 °C +55 °C
Process pressure		Horn: max. 40 bar; Wave-Stick with plate: -1...16 bar; Wave-Stick without plate and L flange: max. 2 bar
Relative dielectric constant		$\epsilon_r \geq 1,5$ (with Wave-Stick: $\epsilon_r \geq 4$) for media with $\epsilon_r < 3$, Still-Well or Wave-Guide or TBF mode is recommended
Electrical connection		M 20 x 1.5 (1) standard; Quickon (1), 1/2" NPT (1), BSP 1/2" (1) on request
Antenna types and materials		Horn: 316L, 316Ti, Hastelloy, Titanium, Tantalum Wave-Stick with plate: PTFE, Wave-Stick without plate: FPM sealing or PTFE + FFKM sealing SW short Wave-Stick: plate for Still-Well only, Still-Well (on request) of stainless-steel
Max. tracing velocity		10 m / min
Mass		6 kg (DN 50 PN40 flange)
Material of wetted parts		1.4571 (316 Ti), 1.4435 (316L), Hastelloy C4 or B2, Titanium, Tantalum, PP, PTFE
Sealing		FPM Viton®, Kalrez® 4079, 2035, 6375, 1091
Ex marking		 II 1/2 G EEx ia IIC T6
Ingress protection		IP 66 / 67

ANTENNAS

Antenna type	Antenna material	Antenna diameter	Antenna length	Max. socket length of process connection**	Transmission angle	Beam radius at 1 m distance
		D	L	X	α	s
Horn	316L, Hastelloy	80 mm*	110 mm	-	16°*	340 mm
		100 mm*	150 mm	-	12°*	250 mm
		140 mm	220 mm	215 mm	8°	210 mm
		200 mm	340 mm	335 mm	6°	200 mm
		300 mm	830 mm	800 mm	5°	238 mm
Wave-Stick	PP, PTFE	25 mm	270 mm	50 mm	9°	160 mm
			384 mm	150 mm		
			500-1000 mm	L-234		
Wave-Guide	316L, Hastelloy	DN 25 mm	600-3000 mm for Ex 600-6000 mm for non Ex	-	The measuring signal is propagated only inside the Wave-Guide / Still-Well!	
Still-Well	316	DN 50-200 mm	> 600 mm	-		

* Should only be used with Still-Well, so transmission angle is only informational data!

** Antenna extensions are available from 100 up to 2000 mm (in steps of 100 mm).

Different antenna extensions can be joined up.