

# IP 68 Radar level transmitter PILOTREK



- Measuring range: 0.2 to 23 m
- Without contact with the fluid
- 4-20 mA loop power supply
- IP 68 compact housing
- Antenna: AISI 316 Ti or Polypropylene
- Cable output

## APPLICATIONS

PILOTREK is an accurate level transmitter of liquids, slurries, emulsions and other chemicals in many fields of application such as: Food, energy, pharmaceutical, chemical industries and even in shipbuilding.

PILOTREK provides a contact-free measurement for those substances which create vapors and is convenient as well as for vacuum applications.

## DESCRIPTION

The Pilotrek is a radar level transmitter without contact with the liquid, with protected electronic module integrated in the housing. Compact, this device powered by the 4-20 mA loop is distinguished by its reliability and accuracy.

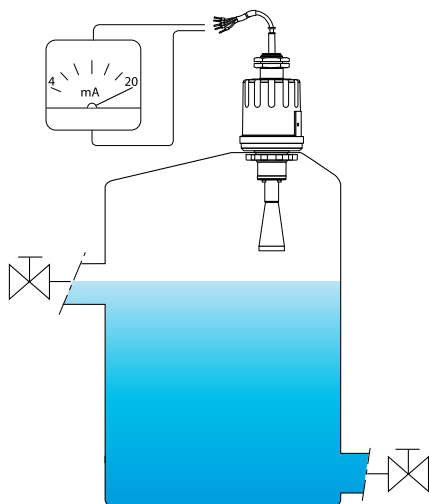
Located above the liquid surface, it provides an analogue signal proportional to the level of the liquid. The measurement is not affected by changes of operating temperature and pressure.

The radar operates at a frequency of 25 GHz (K band). Compared to radars operating at low frequency (5-12 GHz), the antenna size, the dead zone and the measurement angle are reduced.

### Relative dielectric constant ( $\epsilon_r$ ):

The essential condition to operate a radar level measurement is the relative dielectric constant ( $\epsilon_r$ ) of the medium which must be greater than 1.9 .

Petroleum	2.1	Ethyl alcohol	24
Diesel	2.1	Ethanol	25.1
Benzene	2.2	Methyl alcohol	33.1
Gasoline	2.3	Methanol	33.7
Bitumen	2.6	Glycol	37
Ethers	4.4	Nitrobenzene	40
Acetic acid	6.2	Glycerol	41.1
Ammonia	17...26	Water	80
Acetone	21	Sulphuric acid (T=20 °C)	84



Example

# BAMO INTERNATIONAL

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL

Tel +33 (0)1 30 25 83 20 Web [www.bamo.eu](http://www.bamo.eu)

Fax +33 (0)1 34 10 16 05 E-mail [export@bamo.fr](mailto:export@bamo.fr)

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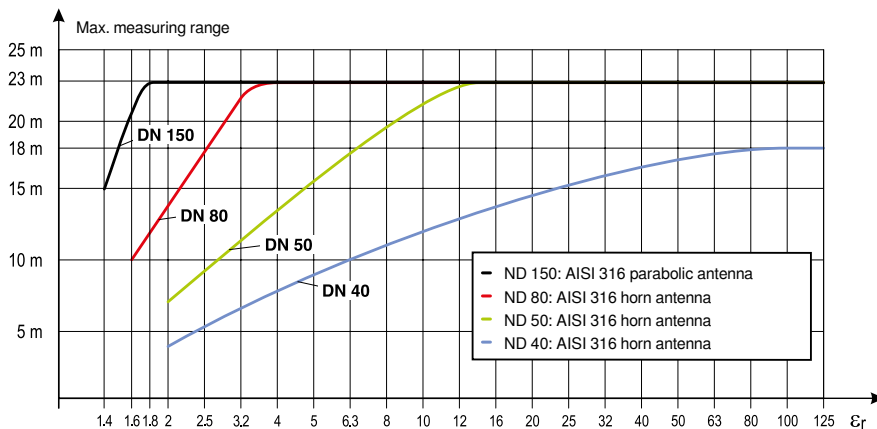
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**Maximum measurement distance:**

The maximum measurement distance of PILOTREK radars depends on the environment and on the selected device (with or without plastic protection). Depending on the relative dielectric constant of the liquid and the process conditions, the maximum measurement distance may be less.

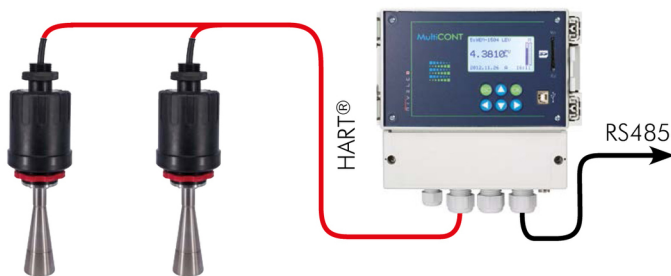
The maximum measurement distance is illustrated in the diagram below. The diagram is valid for a horn type antenna without plastic enclosure, for liquids not foaming, neither vapouring.



The plastic protection (in PP) or the presence of foam and vapours lead to reduce the maximum measurement distance:

Operating conditions	Reduction in amplitude	Maximum distance decreasing by:	Reducing coefficient
Slow agitator	2 ... 6 dB	20 ... 50 %	0.8 ... 0.5
Foaming			
Fast agitator	8 ... 10 dB	60 ... 70 %	0.4 ... 0.3
Condensation	3 ... 10 dB	30 ... 70 %	0.7 ... 0.3
PP enclosure	2 dB	20 %	0.8

**Display unit MULTICONT:**



The MultiCONT manages digital data from several compatible transmitters. If necessary, HART® data are processed, displayed and transmitted to a PC, via the interface RS 485.



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## TECHNICAL FEATURES

Measurement	Level, Distance; Volume
Signal frequency	About 25 GHz (K-band)
Measuring range	From 0.2 to 23 m according antenna type → See § "Maximum measurement distance"
Linearity error	< 0.5 m: ±25 mm 0.5 to 1 m: ±15 mm 1 to 1.5 m: ±10 mm 1.5 to 8 m: ±3 mm > 8 m: ±0.04% of measured distance
Measuring angle	Max. 19° (Antenna ND 40)
Liquid: Minimum $\epsilon_r$	1.9
Resolution	1 mm
Temperature incidence	0.05 % F.S. / 10 °C
Power supply	20 ... 36 V DC
Output signal	4-20 mA + HART®
Display (optional)	Display unit MULTICONT
Signal damping	From 0 to 99 s
Measuring frequency	10 ... 60 s according the application
Probe material	Polypropylene (PP)
Antenna material	AISI 316 Ti (1.4571)
Fluid temperature limits:	-30 ... +100 °C; Max. 80 °C with PP enclosure
Ambient temperature limits	-20 ... +60 °C
Operating pressures	Max. 25 bar; Max. 3 bar with PP enclosure
Fitting	BSP
Protection	IP 68
Cable output	Cable LiYCY; 2x0.5 mm <sup>2</sup> (AWG20) shielded Ø 6 mm Standard length: 5 m; other length on request, Max. 30 m
Electrical protection	Class III
Sealing	FPM, EPDM
Mass	Max. 1.6 kg

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

*ATEX version, flange fittings, other antenna type: On request.*

## CODE NUMBERS AND REFERENCES

Code	Reference	Antenna, ND & material	Fitting	Measuring angle
596 110	WPM 140 4	ND 40 - AISI 316	1 ½" BSP	19°
596 111	WPM 150 4	ND 50 - AISI 316	2" BSP	16°
596 210	WPP 140 4	Ø 44 - PP	1 ½" BSP	19°
596 211	WPP 150 4	Ø 54.5 - PP	2" BSP	16°

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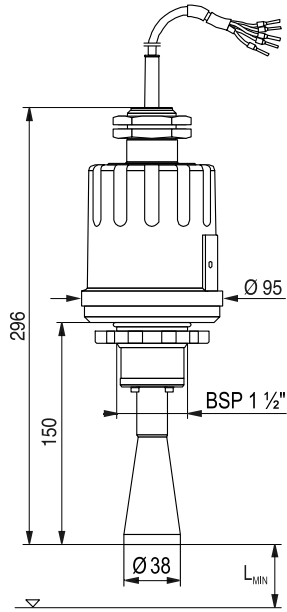
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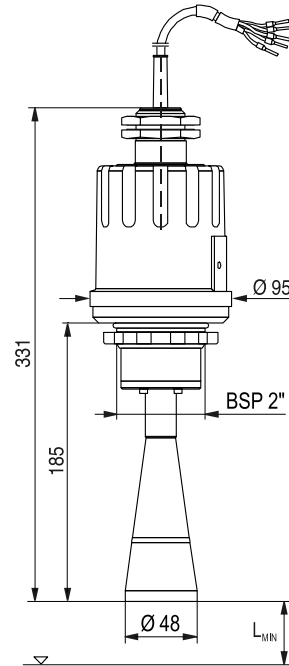
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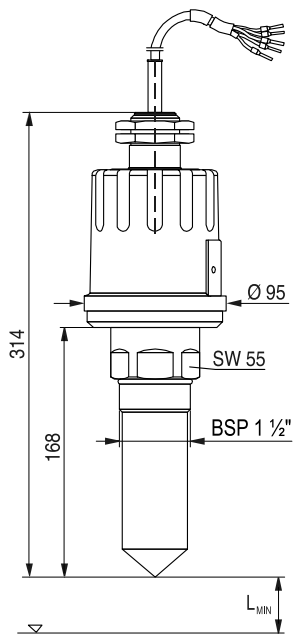
**DIMENSIONS [mm]**



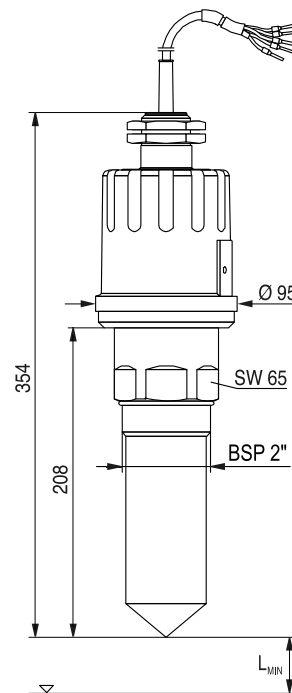
**WPM-140**



**WPM-150**



**WPP-140**



**WPP-150**

**596**

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