

Radar

VEGAPULS 61
VEGAPULS 62
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VEGAPULS 66



Product Information



VEGA

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Take note of safety instructions for Ex applications



Please note the Ex specific safety information which you can find on our homepage www.vega.com/services/downloads and which comes with every instrument. In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units. The sensors must only be operated on intrinsically safe circuits. The permissible electrical values are stated in the certificate.

1 Application, function, configuration

Extremely short microwave pulses with low emitted power are transmitted by the antenna system to the measured product, reflected by the product surface and received back by the antenna system. Radar waves travel at the speed of light. The time from emission to reception of the signals is proportional to the level in the vessel. A special time stretching procedure ensures reliable and precise measurement of the extremely short transmission periods.

The latest microprocessor technology and the proven software ECHOFOX select the level echo from among a large number of false echoes and measure it precisely.

By simply entering the vessel dimensions, the sensor can be made to indicate a level-proportional signal. The product level does not have to be changed during adjustment.

Unaffected by temperature and pressure

The propagation of microwaves is virtually unaffected by the ambient temperature and pressure. Hence these radar sensors are ideal for use under extremely difficult process conditions. Pressures from vacuum up to 160 bar (2320 psi) and temperatures from -40 ... +400 °C (-40 ... +752 °F) are no problem for radar measurement.

Independent of product characteristics

Fluctuations in product composition or even complete product changes do not influence the measuring result. A fresh adjustment is not necessary.

Frequency ranges for all applications

VEGA radar sensors are available in two different frequency ranges and can thus be implemented in a wide variety of applications.

K-band instruments work in a frequency range over 20 GHz. This enables the use of very small antennas and respectively compact process fittings. Due to strong signal focussing, the measuring system achieves very high accuracy.

C-band instruments are characterised by low frequencies around 6 GHz. Thus, in most cases, buildup and dirt on the antenna system or foam on the product surface do not affect the measurement.

Functional safety (SIL)

VEGAPULS 61, 62, 63, 65 and 66 radar sensors can be used for applications that meet the special requirements of safety technology. In single channel architecture this is possible up to SIL2, in double channel, diversitary redundant architecture up to SIL3.

Device selection

VEGAPULS series 60 radar sensors are optimised for each respective application area. They operate in two different frequency ranges (C or K band technology) and are available with different antennas. These factors determine the instrument-specific beam angles, measuring ranges and measuring characteristics. The selection of the most suitable radar sensor depends on the re-

spective application. The type overview on the following pages provides a good initial survey. For a detailed selection you can use the "Finder" and "Configurator" on our website or contact one of our agencies.

1.1 Application examples

Acid tank

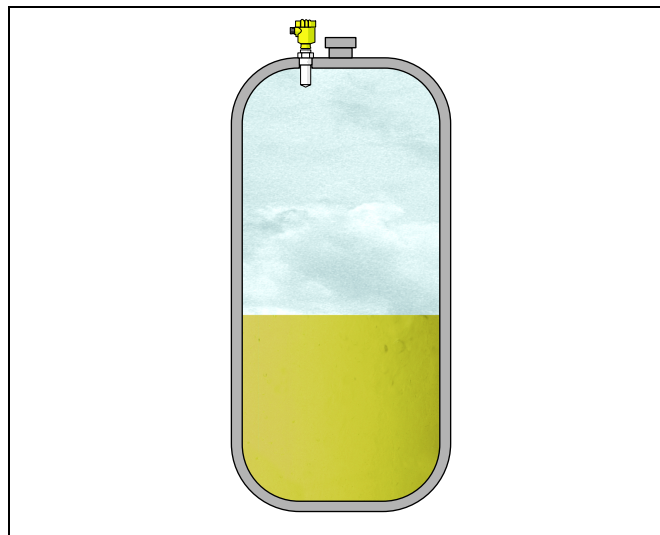


Fig. 1: Level measurement in an acid tank with VEGAPULS 61

A non-contact measuring principle is particularly suitable for level measurement in acid tanks.

VEGAPULS 61 is characterised by a small process fitting and a PVDF encapsulated antenna. The sensor is insensitive to temperature fluctuations and gas phases.

Bitumen tank

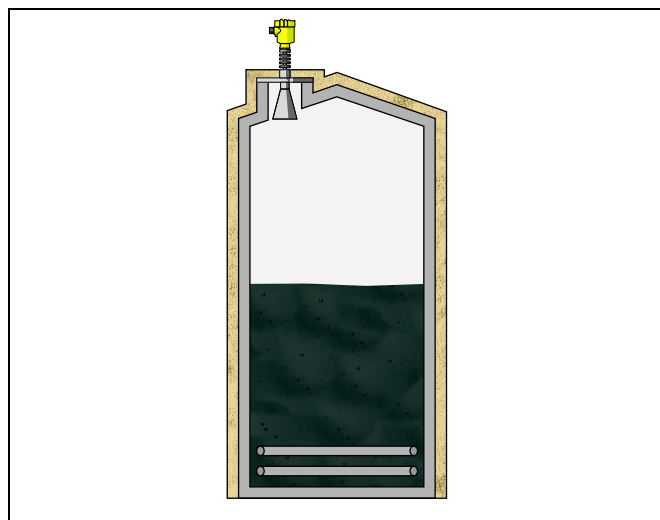


Fig. 2: Level measurement in a bitumen tank with VEGAPULS 62

Bitumen accumulates during crude oil distillation and is stored at temperatures around 200 °C (392 °F).

The non-contact radar measuring principle is particularly suitable for level measurement under high temperatures and in outgasing products. Due to its temperature adapter, the VEGAPULS 62 radar sensor is suitable for temperatures up to 200 °C (392 °F).

Sugar evaporator

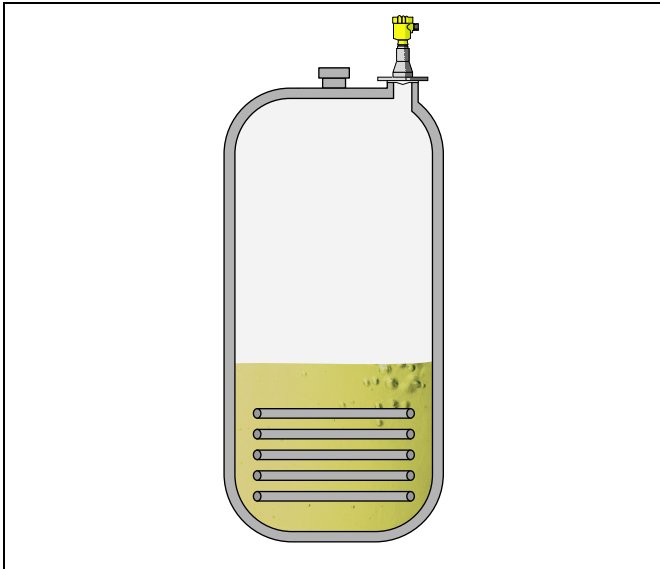


Fig. 3: Level measurement in a sugar evaporator with VEGAPULS 63

The VEGAPULS 63 radar sensor is particularly suitable for level measurement in sugar evaporators. The PTFE encapsulated horn antenna protects against contamination and gumming up by the juice. The instrument is overpressure and vacuum resistant, even against pressure or vacuum shocks.

Storage tank for hazardous waste

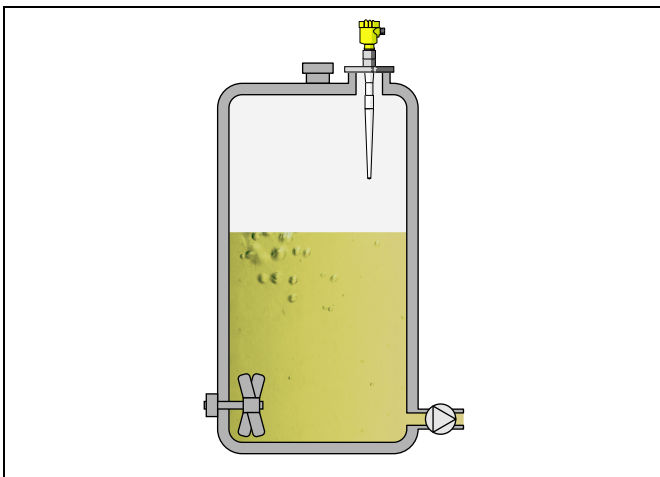


Fig. 4: Level measurement in a storage tank with VEGAPULS 65

The VEGAPULS 65 radar sensor is the ideal measuring system for level measurement of lacquers, paints and dilutions. The radar measurement delivers accurate measuring results independent of process conditions such as outgasing and agitator motion.

Storage tower

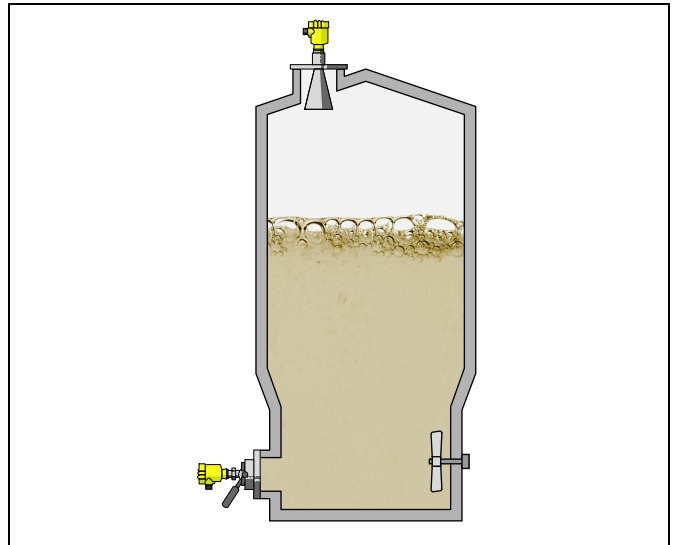


Fig. 5: Level measurement in a storage tower with VEGAPULS 66

Paper suspension is stored in large storage towers. The VEGAPULS 66 radar sensor with a DN 250 flange and large horn antenna is well suited for level measurement in the upper part of the towers. The sensor delivers reliable measured values, unaffected by process conditions such as temperature, steam and high pulp densities.

Ammonia vessel

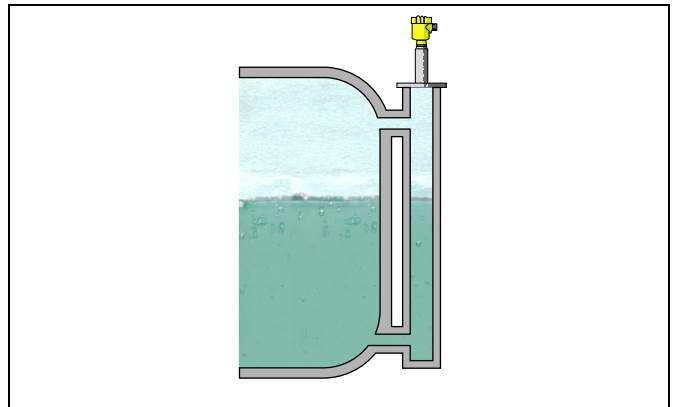


Fig. 6: Level measurement in an ammonia vessel with VEGAPULS 66

The optimum solution for level measurement in an ammonia vessel is the VEGAPULS 66 radar sensor in standpipe version.

It operates with low frequencies so that its microwaves are only slightly damped. The standpipe improves the reflective properties. The signal coupling into the standpipe via the ceramic antenna system is completely diffusion tight.



Information:

Continuative documentation:

- 28434 - VEGAPULS 61
- 28435 - VEGAPULS 62

- 28436 - VEGAPULS 63
- 28437 - VEGAPULS 65
- 28438 - VEGAPULS 66
- 31388 - Safety Manual VEGAPULS series 60 -
4 ... 20 mA/HART

2 Type overview

VEGAPULS 61



VEGAPULS 62



VEGAPULS 63



Applications:	corrosive liquids in small vessels under easy process conditions	virtually all products in storage tanks and process vessels under the most difficult process conditions, high temperatures and pressures	very corrosive liquids in storage tanks and process vessels, particularly under hygienic process conditions
Measuring range:	depending on antenna > 10 m (32.81 ft) or > 20 m (65.62 ft)	> 35 m (114.83 ft)	> 20 m (65.62 ft)
Antenna, material:	completely PVDF encapsulated	Horn antenna or with mounted ½" standpipe, 316L	completely PTFE, PFA or PVDF encapsulated
Process fitting, material:	Thread G1½ A, PVDF, PP or flange PP	Thread G1½ A or flange, 316L, Hastelloy	Flange or hygienic fitting 316L
Process temperature:	-40 ... +80 °C (-40 ... +176 °F)	-40 ... +200 °C (-40 ... +392 °F)	-170 ... +150 °C (-274 ... +302 °F)
Process pressure:	-1 ... 3 bar/-100 ... 300 kPa (-14.5 ... 43.5 psi)	-1 ... 40 bar/-100 ... 4000 kPa (-14.5 ... 580 psi)	-1 ... 16 bar/-100 ... 1600 kPa (-14.5 ... 232 psi)
Measuring accuracy:	±5 mm	±3 mm	±3 mm
Frequency range:	K-band	K-band	K-band
Signal output:	4 ... 20 mA/HART in two-wire, four-wire, Profibus PA, Foundation Fieldbus technology	4 ... 20 mA/HART in two-wire, four-wire, Profibus PA, Foundation Fieldbus technology	4 ... 20 mA/HART in two-wire, four-wire, Profibus PA, Foundation Fieldbus technology
Adjustment/Indication:	PLICSCOM	PLICSCOM	PLICSCOM
Remote adjustment/indication:	VEGADIS 61	VEGADIS 61	VEGADIS 61
Functional safety:	up to SIL3	up to SIL3	up to SIL3

VEGAPULS 65**VEGAPULS 66**

Applications:	corrosive liquids, vessels with small process fitting under easy process conditions	liquids and solids, large storage tanks as well as process vessels under difficult or extreme process conditions, highest temperatures and pressures
Measuring range:	> 30 m (98.43 ft)	> 35 m (114.83 ft)
Antenna, material:	completely PVDF- or PTFE encapsulated, PFA plated	Horn antenna or with mounted 2" standpipe, 316L
Process fitting, material:	G1½ A or flange, PVDF, 316L	Flange 316L, Hastelloy
Process temperature:	-40 ... +150 °C (-40 ... +302 °F)	-40 ... +400 °C (-40 ... +752 °F)
Process pressure:	-1 ... 16 bar/-100 ... 1600 kPa (-14.5 ... 232 psi)	-1 ... 160 bar/-100 ... 16000 kPa (-14.5 ... 2320 psi)
Measuring accuracy:	±10 mm	±10 mm
Frequency range:	C-band	C-band
Signal output:	4 ... 20 mA/HART in two-wire, four-wire, Profibus PA, Foundation Fieldbus technology	4 ... 20 mA/HART in two-wire, four-wire, Profibus PA, Foundation Fieldbus technology
Adjustment/Indication:	PLICSCOM	PLICSCOM
Remote adjustment/indication:	VEGADIS 61	VEGADIS 61
Functional safety:	up to SIL3	up to SIL3

Indicating and adjustment module



PLICSCOM

Housing



Plastic



Stainless steel



Aluminium



Aluminium (double chamber)

Electronics



4 ... 20 mA/HART



4 ... 20 mA/HART four-wire



Profibus PA



Foundation Field-bus

Process fitting



Thread



Flange



Sanitary

Sensors



Horn antenna



Encapsulated antenna

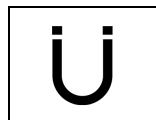


Rod antenna

Approvals



SIL



Overfill protection



Gas-explosion protection



Dust-explosion protection

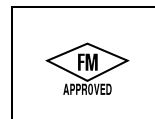


EHEDG

EHEDG



Ship



FM APPROVED

FM



CSA®

CSA

3 Mounting instructions

Measuring range

For the flange versions, the lower flange side is the reference plane for the measuring range, for threaded versions, the seal surface of the thread.

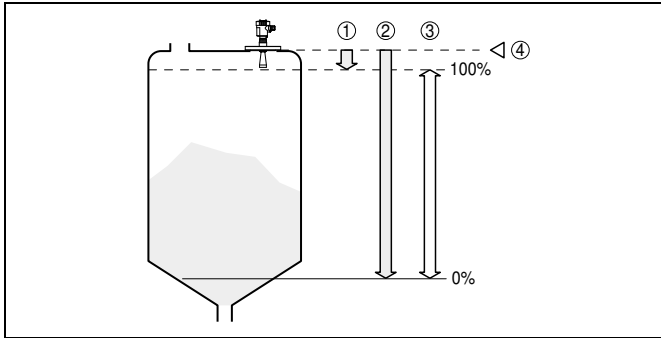


Fig. 7: Measuring range (operating range), max. measuring distance and reference plane

- 1 full
- 2 empty (max. measuring distance)
- 3 Measuring range
- 4 Reference plane

Installation position

Mount VEGAPULS at a distance of at least 200 mm from the vessel wall. An ideal installation location is at half vessel radius. If the sensor is mounted in the center of round or dished vessel tops, multiple echoes can arise. These can, however, be faded out by an appropriate adjustment.

If you cannot keep this distance you should carry out a false echo storage before setup. This applies mainly if buildup on the vessel wall is expected. In this case, we recommend repeating a false echo storage later with existing buildup.

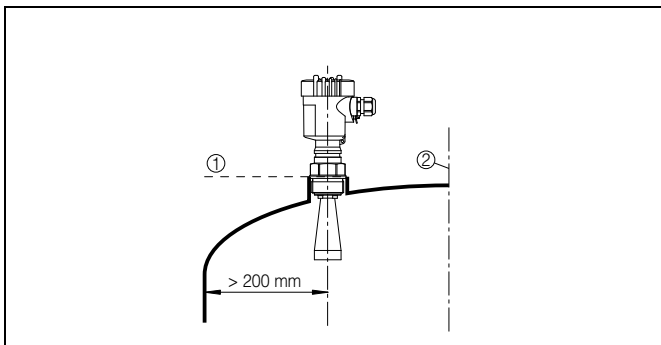


Fig. 8: Mounting on round vessel tops VEGAPULS 61, 62, 63

- 1 Reference plane
- 2 Vessel center or symmetry axis

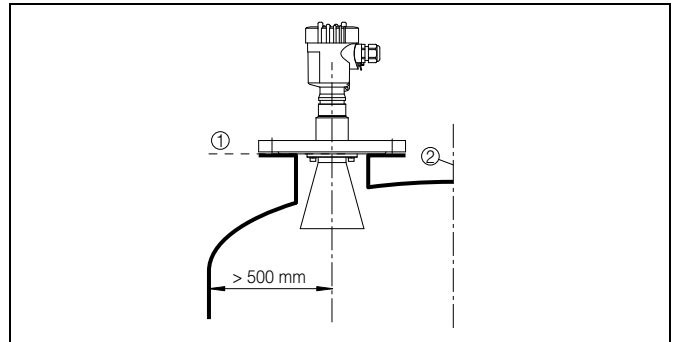


Fig. 9: Mounting on round vessel tops VEGAPULS 65, 66

- 1 Reference plane
- 2 Vessel center or symmetry axis

In vessels with conical bottom it can be advantageous to mount the sensor in the center of the vessel, as measurement is then possible down to the lowest point of the vessel bottom.

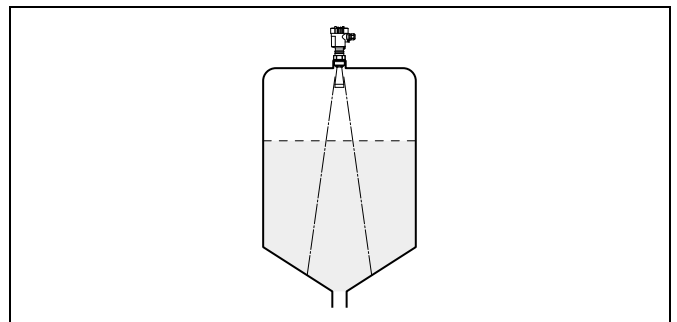


Fig. 10: Vessel with conical bottom

Measuring range

For the flange versions, the lower flange side is the reference plane for the measuring range, for threaded versions, the seal surface of the thread.

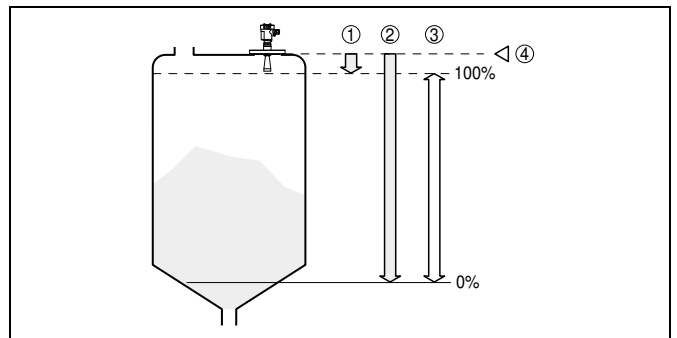


Fig. 11: Measuring range (operating range), max. measuring distance and reference plane

- 1 full
- 2 empty (max. measuring distance)
- 3 Measuring range
- 4 Reference plane

Pressure

The process fitting must be sealed if there is gauge or low pressure in the vessel. Before use, check if the seal material is resistant against the measured product. The max. permissible pressure is stated in chapter "Technical data" or on the type label of the sensor.

Horn and parabolic antenna

The illustrations with the following mounting instructions show a VEGAPULS with horn antenna. The mounting instructions apply analogously also to the version with parabolic antenna.

Socket

Socket pieces should be dimensioned such that the antenna end protrudes at least 10 mm (0.4 in) out of the socket.

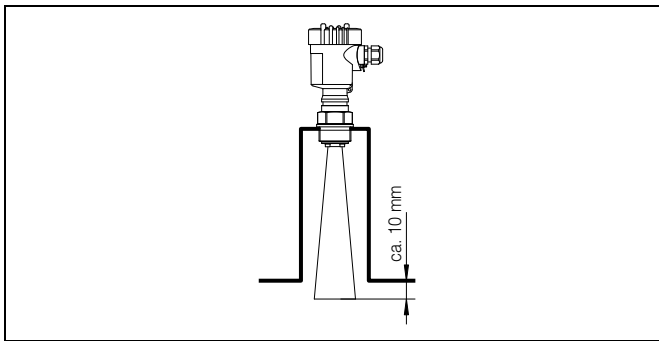


Fig. 12: Recommended socket mounting

If the reflective properties of the medium are good, you can mount VEGAPULS on sockets higher than the antenna length. You will find recommended values for socket heights in the following illustration. The socket end should be smooth and burr-free, if possible also rounded.

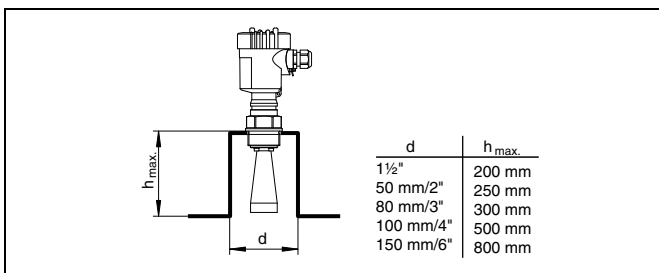


Fig. 13: Deviating socket dimensions

Inflowing medium

Do not mount the instruments in or above the filling stream. Make sure that you detect the product surface, not the inflowing product.

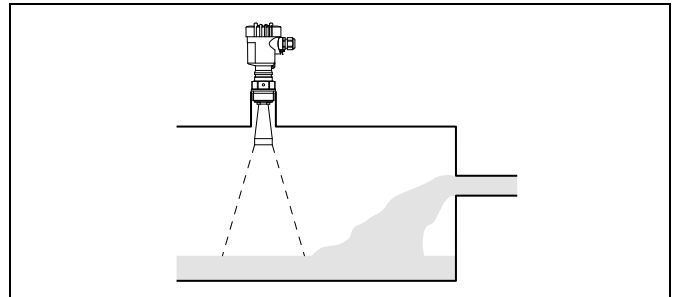


Fig. 14: Inflowing medium

Sensor orientation

Align the sensor in liquids as vertical as possible to the product surface to achieve optimum measuring results.

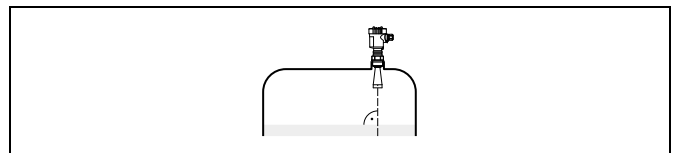


Fig. 15: Alignment in liquids

Vessel installations

Silo installations such as e.g. ladders, level switches, struts, and also structured vessel walls, can cause false echoes that get superimposed on the useful echo. The mounting location of the radar sensor should be a place where no installations cross the microwave signals. Make sure when planning your measurement loop that the radar signals have a "clear view" to the product.

Agitators

If there are agitators in the vessel, a false echo storage should be carried out with the agitators in motion. This ensures that the interfering reflections from the agitators are saved with the blades in different positions.

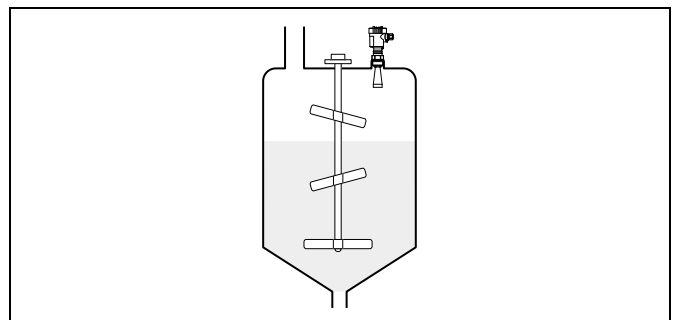


Fig. 16: Agitators

Foam generation

Through the action of filling, stirring and other processes in the vessel, dense foams which considerably damp the emitted signals may form on the product surface.

If foams lead to measurement errors, you should use the biggest possible radar antennas or low frequency radar sensors e.g. VEGAPULS 65, 66 (C-band).

VEGAFLEX sensors with guided microwaves are not influenced by foam generation and are particularly suitable for such applications.

Standpipe antenna

When using a standpipe antenna, influences by turbulences and vessel installations such as e.g. heating spirals or agitators are excluded.

The standpipe antenna is also suitable for vessels with foam generation or for measurement of products with low dielectric figures (DK > 1.6).

Standpipe antennas must extend all the way down to the requested min. level, as measurement is only possible within the tube. If a good mixing of the product is important, you should use a radar sensor with perforated surge pipe.

Adhesive products

Measurement in a standpipe is not recommended for very adhesive products.

Turbulences

If turbulence or strong product movement occurs in the vessel, long standpipe antennas should be fastened to the vessel wall.

Inflowing medium

Do not mount the instruments in or above the filling stream.

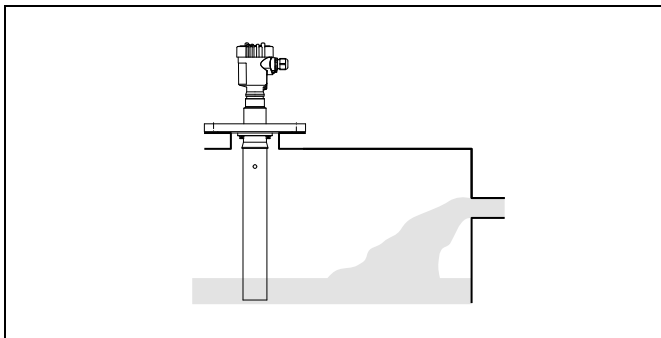


Fig. 17: Inflowing liquid

Measurement in the standpipe (surge or bypass tube)

By using a standpipe, the influence of vessel installations and turbulence can be excluded. Under these prerequisites, the measurement of products with low dielectric values (from DK value 1.6) is possible.



Note:

Measurement in a standpipe is not recommended for very adhesive products.

Surge or bypass tubes must extend all the way down to the requested min. level, as measurement is only possible within the tube.

Make sure you provide the necessary upper vent hole in the **surge pipe**. The hole must be aligned so that it and the polarisation marking on the sensor are in the same plane (see illustration: "Pipe antenna system in a tank").

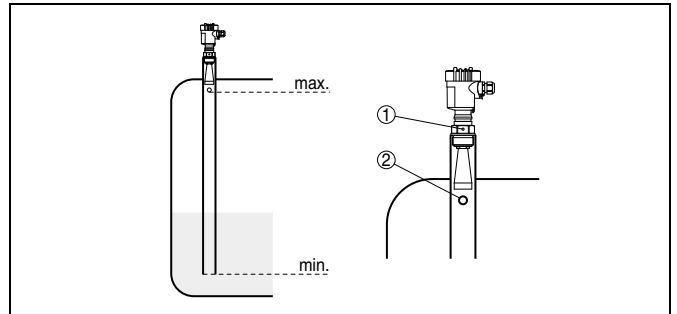


Fig. 18: Pipe antenna system in a tank. The vent hole in the surge pipe must be in one plane with the polarisation marking on the sensor.

- 1 Marking of the polarisation direction
- 2 Vent hole max. ø 5 mm (0.2 in)

If possible, the antenna diameter of the sensor should correspond to the inner diameter of the tube. With VEGAPULS this is approx. 40 mm (1.575 in). The sensor can be used with tube diameters between 40 ... 80 mm (1.575 ... 3.15 in).

As an alternative to the surge pipe in the vessel, a pipe system can be mounted outside of the vessel as a bypass tube. For setup, select the function "Bypass tube".

Align the sensor in such a way that the polarisation marking on the process fitting is in the same plane as the tube holes or the tube connection openings (see illustration: "VEGAPULS in a bypass tube").

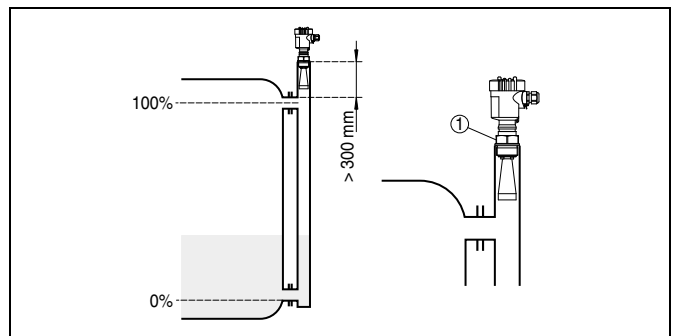


Fig. 19: VEGAPULS in a bypass tube. The polarisation marking on the process fitting must be in one plane with the tube holes or the tube connection openings.

- 1 Marking of the polarisation direction

When the sensor is mounted on a bypass tube, the distance from VEGAPULS to the upper tube connection should be approx. 300 mm (11.811 in) or more. In case of extremely rough tube inner walls, you should use an inserted tube (tube in tube) or a radar sensor with tube antenna.



Information:

With VEGAPULS in flange version, the polarisation plane is always in the center between two flange holes.

Flow measurement

The short examples are meant to give only introductory information on the flow measurement. Planning information is available from flume manufacturers and in special literature.

Note the following facts for the **Measuring wall with rectangular flume:**

- Installation of the sensor on the headwater side
- Installation in the center of the flume and vertical to the liquid surface
- Distance to the overfall orifice
- Distance of orifice opening above ground
- Min. distance of the orifice opening to bottom water
- Min. distance of the sensor to max. storage level

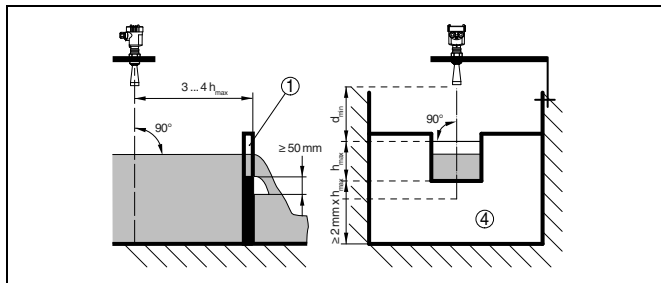


Fig. 20: Flow measurement with rectangular flume: d = min. distance of the sensor; h_{max} = max. filling of the rectangular flume

- 1 Overfall orifice (side view)
- 2 Headwater
- 3 Bottom water
- 4 Overfall orifice (view from bottom water)

Note the following facts for the **Khafagi-Venturi flume:**

- Installation of the sensor at the inlet side
- Installation in the center of the flume and vertical to the liquid surface
- Distance to the Venturi flume
- Min. distance of the sensor to max. storage level

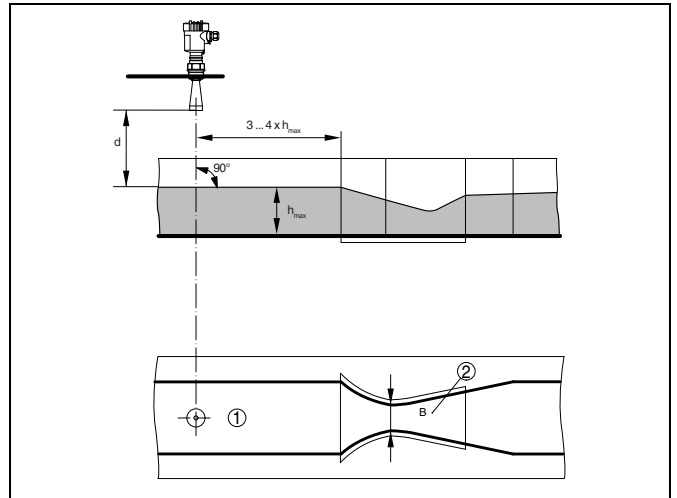


Fig. 21: Flow measurement with Khafagi-Venturi flume: d = Min. distance of the sensor; h_{max} = max. filling of the flume; B = biggest throat of the flume

- 1 Position sensor
- 2 Venturi flume

4 Electrical connection

4.1 General prerequisites

The supply voltage range can differ depending on the instrument version. You can find exact specifications in chapter "Technical data".

The national installation standards as well as the valid safety regulations and accident prevention rules must be observed.



In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units.

4.2 Voltage supply

4 ... 20 mA/HART two-wire

The VEGA power supply units VEGATRENN 149AEx, VEGASTAB 690, VEGADIS 371 as well as VEGAMET signal conditioning instruments are suitable for power supply. When one of these instruments is used, a reliable separation of the supply circuits from the mains circuits according to DIN VDE 0106 part 101 is ensured for the sensor.

4 ... 20 mA/HART four-wire

Power supply and current output are carried on two separate connection cables.

The standard version can be operated with an earth-connected current output, the Exd version must be operated with a floating output.

The instrument is designed in protection class I. To maintain this protection class, it is absolutely necessary that the ground conductor be connected to the internal ground conductor terminal.

Profibus PA

Power is supplied by a Profibus DP/PA segment coupler or a VEGALOG 571 EP input card.

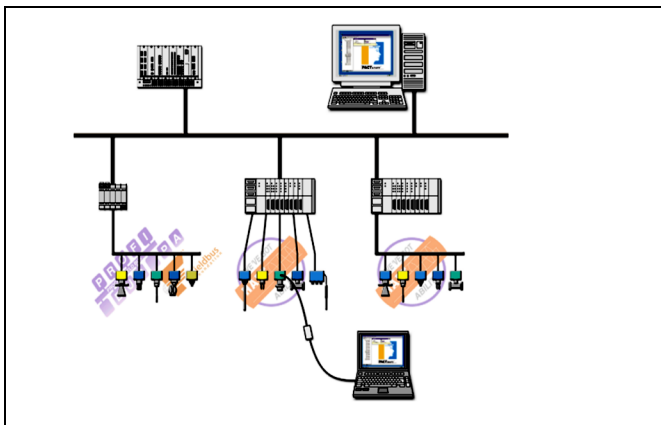


Fig. 22: Integration of instruments in a Profibus PA system via segment coupler DP/PA or data recording systems with Profibus PA input card

Foundation Fieldbus

Power supply via the H1 Fieldbus cable.

4.3 Connection cable

Generally

The sensors are connected with standard cable without screen. An outer cable diameter of 5 ... 9 mm ensures the seal effect of the cable entry.

4 ... 20 mA/HART four-wire

For power supply, an approved installation cable with PE conductor is necessary.

4 ... 20 mA/HART two-wire and four-wire

If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used. In HART multidrop mode the use of screened cable is generally recommended.

Profibus PA, Foundation Fieldbus

The installation must be carried out according to the appropriate bus specification. VEGAPULS is connected appropriately with screened cable according to the bus specification. Power supply and digital bus signal are transmitted via the same two-wire connection cable. Make sure that the bus is terminated via appropriate terminating resistors.

VEGAPULS are optionally available with usual plug connectors (see "Technical data").



In Ex applications, the corresponding installation regulations must be noted for the connection cable.

4.4 Cable screen and grounding

If screened cable is necessary, the cable screen must be connected on both ends to ground potential. If potential equalisation currents are expected, the connection on the evaluation side must be made via a ceramic capacitor (e.g. 1 nF, 1500 V).

Profibus PA, Foundation Fieldbus

In systems with potential separation, the cable screen is connected directly to ground potential on the power supply unit, in the connection box and directly on the sensor.

In systems without potential equalisation, connect the cable screen directly to ground potential only at the power supply unit and at the sensor - do not connect to ground potential in the connection box or T-distributor.

4.5 Wiring plan

Single chamber housing

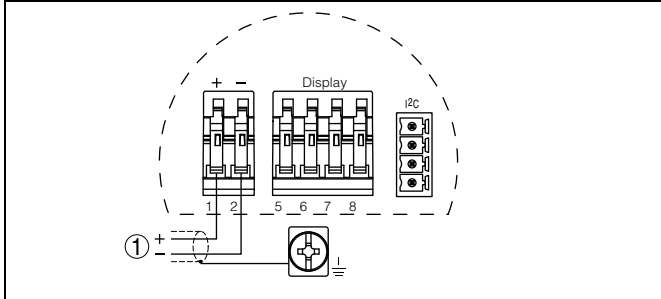


Fig. 23: Connection HART two-wire, Profibus PA, Foundation Fieldbus

- 1 Voltage supply and signal output

Double chamber housing - two-wire

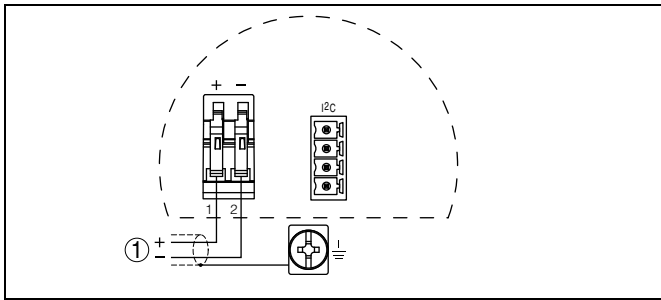


Fig. 24: Connection HART two-wire, Profibus PA, Foundation Fieldbus

- 1 Voltage supply and signal output

Double chamber housing - 4 ... 20 mA/HART four-wire

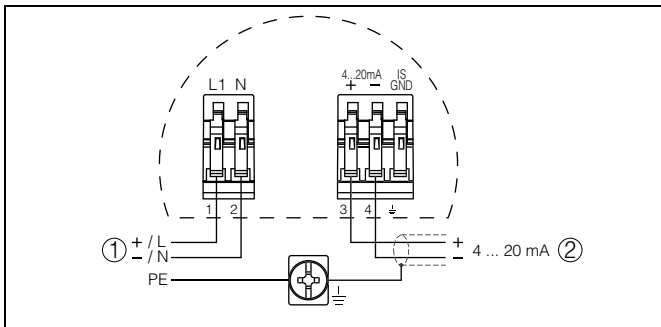


Fig. 25: Connection 4 ... 20 mA/HART four-wire

- 1 Voltage supply
- 2 Signal output

Wire assignment, connection cable with version IP 66/IP 68, 1 bar

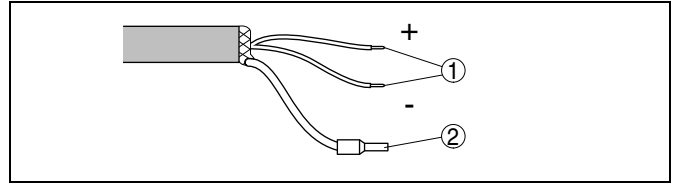


Fig. 26: Wire assignment, connection cable

- 1 brown (+) and blue (-) to power supply or to the processing system
- 2 Screen

5 Operation

5.1 Overview

The sensors can be adjusted with the following adjustment media:

- with indicating and adjustment module
- an adjustment software according to FDT/DTM standard, e.g. PACTware™ and PC

and, depending on the signal output, also with:

- a HART handheld (4 ... 20 mA/HART)
- The adjustment program AMS (4 ... 20 mA/HART and Foundation Fieldbus)
- The adjustment program PDM (Profibus PA)
- a configuration tool (Foundation Fieldbus)

The entered parameters are generally saved in the sensor, optionally also in the indicating and adjustment module or in the adjustment program.

5.2 Adjustment with the indicating and adjustment module PLICSCOM

Setup and indication

PLICSCOM is a pluggable indication and adjustment module for plics® sensors. It can be placed in four different positions on the instrument (each displaced by 90°). Indication and adjustment are carried out via four keys and a clear, graphic-capable dot matrix display. The adjustment menu with language selection is clearly structured and enables easy setup. After setup, PLICSCOM serves as indicating instrument: through the screwed cover with glass insert, measured values can be read directly in the requested unit and presentation style.

The integrated background lighting of the display can be switched on via the adjustment menu.¹⁾

PLICSCOM adjustment

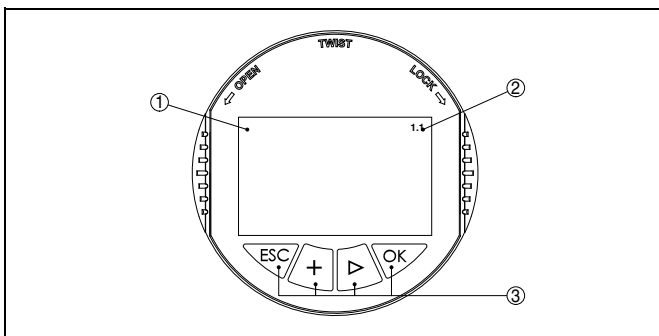


Fig. 27: Indicating and adjustment elements

- 1 LC display
- 2 Indication of the menu item number
- 3 Adjustment keys

Key functions

- **[OK]** key:
 - Move to the menu overview

¹⁾ For instruments with national approvals such as e.g. according to FM or CSA only available at a later date.

- Confirm selected menu
- Edit parameter
- Save value

- **[->]** key to select:
 - menu change
 - list entry
 - Select editing position
- **[+]** key:
 - Change value of the parameter
- **[ESC]** key:
 - interrupt input
 - jump to the next higher menu

5.3 Adjustment with PACTware™

PACTware™/DTM

Independent of the respective signal output 4 ... 20 mA/HART, Profibus PA or Foundation Fieldbus, the sensors can be operated directly on the instrument via PACTware™. The sensors with signal output 4 ... 20 mA/HART can be also operated via the HART signal on the signal cable.

An VEGACONNECT interface adapter as well as an instrument driver for the respective sensor is necessary for the adjustment with PACTware™. All currently available VEGA DTMs are included as DTM Collection with the current PACTware™ version on a CD. They are available for a protective fee from our respective VEGA agency. In addition, this DTM Collection incl. the basic version of PACTware™ can be downloaded free-of-charge from the Internet.

To use the entire range of functions of a DTM, incl. project documentation, a DTM licence is required for that particular instrument family. This licence can be bought from the VEGA agency serving you.

Connection of the PC via VEGACONNECT 3

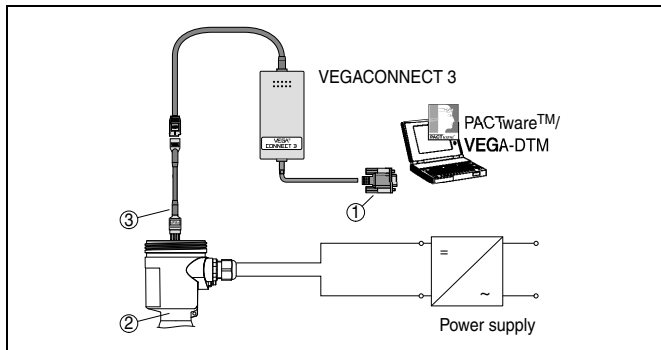


Fig. 28: Connection of the PC directly to the sensor via I²C interface

- 1 RS232 connection
- 2 VEGAPULS
- 3 I²C adapter cable for VEGACONNECT 3

To adjust with PACTware™, a VEGACONNECT 3 with I²C adapter cable (art. no. 2.27323) as well as a power supply unit is necessary in addition to the PC and the suitable VEGA-DTM.

Connection of the PC via VEGACONNECT 4

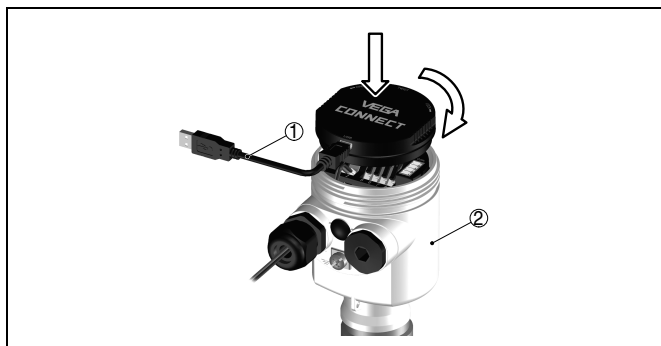


Fig. 29: Internal connection of the PC directly to the sensor via I²C interface

- 1 USB cable
- 2 Sensor

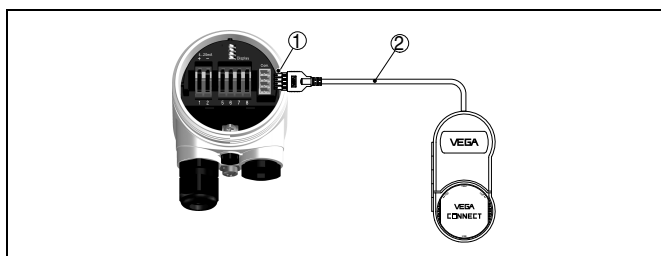


Fig. 30: External connection of the PC directly to the sensor via I²C interface

- 1 I²C bus (Com.) interface
- 2 I²C connection cable of VEGACONNECT 4

5.4 Adjustment with other adjustment programs

PDM

For VEGA PA sensors, instrument descriptions for the adjustment program PDM are available as EDD. The instrument descriptions are already implemented in the current version of PDM. For older versions of PDM, a free-of-charge download is available via Internet.

AMS

For VEGA FF sensors, instrument descriptions for the adjustment program AMS™ are available as DD. The instrument descriptions are already implemented in the current version of AMS™. For older versions of AMS™, a free-of-charge download is available via Internet.

6 Technical data

General data

316L corresponds to 1.4404 or 1.4435

Common data

Materials, non-wetted parts

- Housing
- Seal between housing and housing cover
- Inspection window in housing cover for PLICSCOM
- Ground terminal

Plastic PBT (polyester), Alu die-casting powder-coated, 316L
NBR (stainless steel housing), silicone (Alu/plastic housing)
Polycarbonate (UL-746-C listed)
316Ti/316L

VEGAPULS 61

Materials, wetted parts

- Process fitting - thread, flange
- Weight

PVDF, 316L, PP
0.7 ... 3.4 kg (1.5 ... 7.5 lbs), depending on the process fitting and housing

VEGAPULS 62

Materials, wetted parts

- Process fitting
- Seal - process fitting 316L
- Antenna
- Antenna cone
- seal, antenna system
- Standpipe

Weight with horn antenna

- Process fitting - thread
- Process fitting - flange

Weight with parabolic antenna

- Process fitting - thread
- Process fitting - flange

Standpipe length

316L, Hastelloy C22, Hastelloy C22 plated, Monell Alloy
Klingsil C-4400
316L, Hastelloy C22, Monell Alloy
PTFE (TFM 1600 PTFE), PP
FKM (Viton), Kalrez 2035, 6230 (FDA), 6375
316L, Hastelloy C22

2 ... 2.8 kg (4.4 ... 6.2 lbs), depending on thread size and housing
4.2 ... 15.4 kg (9.3 ... 34 lbs), depending on flange size and housing

2.8 ... 3.6 kg (6.2 ... 13.7 lbs), depending on thread size and housing
5 ... 16.2 kg (11 ... 35.7 lbs), depending on the flange size and housing
> 5.85 m (19.19 ft)

VEGAPULS 63

Materials, wetted parts

- Process fitting
 - Antenna
- Weight

- Tri-Clamp, bolting
- Flanges

316L
PTFE (TFM 1600)

3.5 ... 6 kg (7.7 ... 13.2 lbs), depending on size and housing
4.2 ... 15.4 kg (9.3 ... 34 lbs), depending on flange size and housing

VEGAPULS 65

Materials, wetted parts

- Process fitting - thread
- Seal - thread PVDF
- Process fitting - flange
- Antenna for sockets 50 mm (1.969 in)
- Antenna for sockets 100 mm (3.937 in) and 250 mm (9.843 in)

Weight

- Process fitting - thread
- Process fitting - flange

PVDF, 316L
FKM (Viton)
Flange plating PTFE
PVDF and PTFE
PTFE

2 ... 2.8 kg (4.4 ... 6.2 lbs), depending on thread size and housing
4.2 ... 15.4 kg (9.3 ... 34 lbs), depending on flange size and housing

VEGAPULS 66

Materials, wetted parts

- Process fitting
- Antenna
- Antenna cone
- seal, antenna system

- Standpipe

Weight

Standpipe length

316L, Hastelloy C22 plated
316L, Hastelloy C22
PTFE (TFM 1600), ceramic (99.9 % AL₂O₃)
FKM (Viton), Kalrez 6375, FEP FKM (Viton) coated, EPDM (FDA-ap-
proved), graphite
316L, Hastelloy C22
6.3 ... 136 kg (13.9 ... 300 lbs), depending on flange size, pressure stage
and housing
> 5.85 m (19.19 ft)

Output variable

4 ... 20 mA/HART

Output signal	4 ... 20 mA/HART
Signal resolution	1.6 μ A
Fault message	Current output unchanged 20.5 mA, 22 mA, < 3.6 mA (adjustable)
Max. output current	22 mA
Load	
– 4 ... 20 mA/HART two-wire instrument	see load diagram under Power supply
– 4 ... 20 mA/HART four-wire instrument	max. 500 Ohm ²⁾
Damping (63 % of the input variable)	0 ... 999 s, adjustable
Fulfilled NAMUR recommendations	NE 43

Profibus PA

Output signal	digital output signal, format according to IEEE-754
Sensor address	126 (default setting)
Current value	10 mA, \pm 0.5 mA
Integration time (63 % of the input variable)	0 ... 999 s, adjustable

Foundation Fieldbus

Output	
– Signal	digital output signal, Foundation Fieldbus protocol
– Physical layer	according to IEC 61158-2
Channel Numbers	
– Channel 1	Primary Value
– Channel 2	Secondary Value 1
– Channel 3	Secondary Value 2
Transmission rate	31.25 Kbit/s
Current value	10 mA, \pm 0.5 mA
Integration time (63 % of the input variable)	0 ... 999 s, adjustable

Input variable

Common data

Parameter	distance between process fitting and product surface
-----------	--

VEGAPULS 61

Min. distance from antenna end	50 mm (1.969 in) ³⁾
Recommended measuring range PVDF-encapsulated antenna system	> 10 m (32.81 ft)
Recommended measuring range plastic horn antenna	> 20 m (65.62 ft)

VEGAPULS 62

Min. distance from antenna end	50 mm (1.969 in)
Recommended measuring range depending on the diameter of the antenna horn	
– \varnothing 40 mm (1.575 in)	> 10 m (32.81 ft)
– \varnothing 48 mm (1.89 in)	> 15 m (49.21 ft)
– \varnothing 75 mm (2.953 in), \varnothing 95 mm (3.74 in), parabolic antenna	> 30 m (98.43 ft)
Max. measuring range	
– Horn or parabolic antenna	> 35 m (114.83 ft)
– Standpipe version	according to standpipe length

VEGAPULS 63

min. distance from flange	50 mm (1.969 in)
Recommended measuring range depending on the process fitting	
– Tri-Clamp 2"	> 10 m (32.81 ft)
– Tri-Clamp 3", 4"	> 20 m (65.62 ft)
– Bolting DN 50	> 10 m (32.81 ft)
– Bolting DN 80	> 20 m (65.62 ft)
– flange DN 50, ANSI 2"	> 10 m (32.81 ft)
– Flange DN 80 ... DN 150, ANSI 3" ... 6"	> 20 m (65.62 ft)

²⁾ With inductive load ohmic share min. 25 Ohm/mH.

³⁾ In products with low dielectric value up to 50 cm (19.69 in).

VEGAPULS 65

Min. distance from antenna tip 100 mm (3.937 in)
 Measuring range > 30 m (98.43 ft)

VEGAPULS 66

Min. distance from antenna edge 100 mm (3.937 in)
 Recommended measuring range 30 m (98.43 ft)
 Max. measuring range
 – Horn antenna 35 m (114.83 ft)
 – Standpipe version according to standpipe length

Measuring accuracy

Resolution, general > 1 mm (0.039 in)
 Deviation⁴⁾ see diagrams

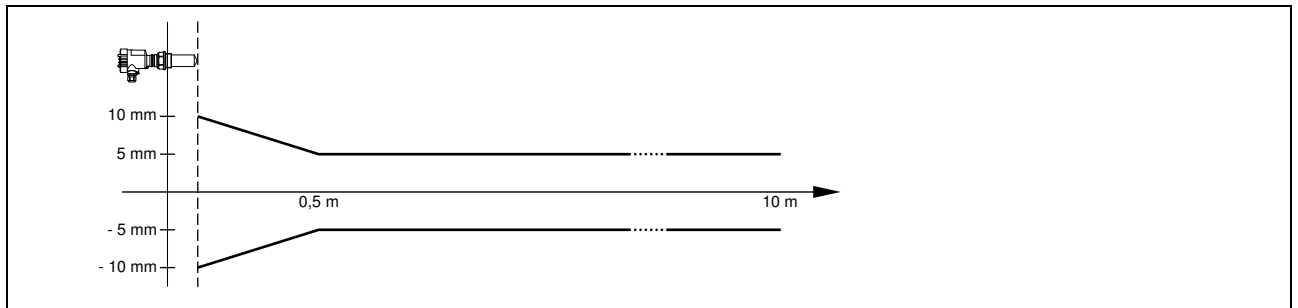


Fig. 31: Deviation VEGAPULS 61 with encapsulated antenna system in mm, measuring range in m

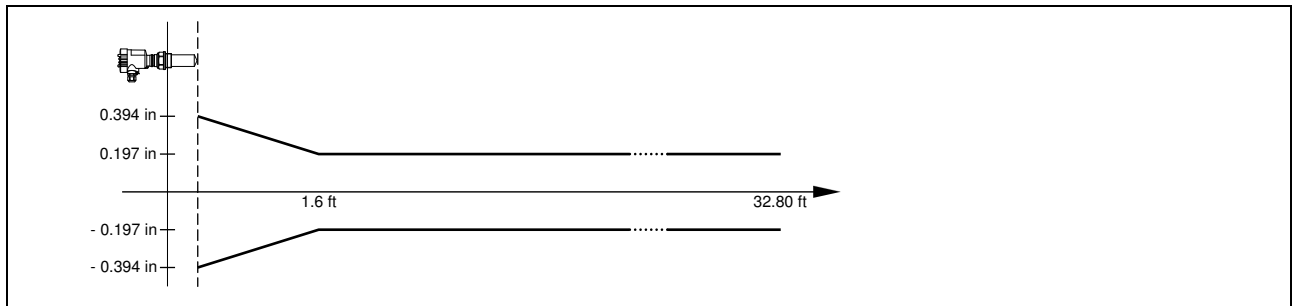


Fig. 32: Deviation VEGAPULS 61 with encapsulated antenna system in inch, measuring range in ft

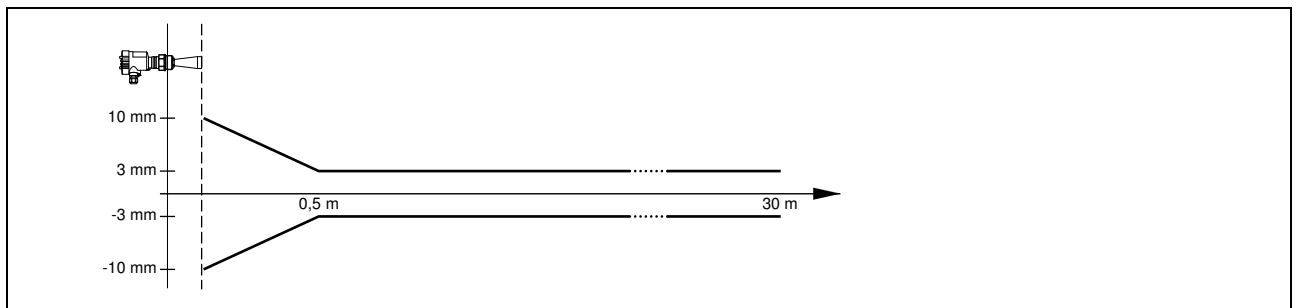


Fig. 33: Accuracy VEGAPULS 62 with horn antenna in mm, measuring range in m

⁴⁾ Incl. non-linearity, hysteresis and non-repeatability.

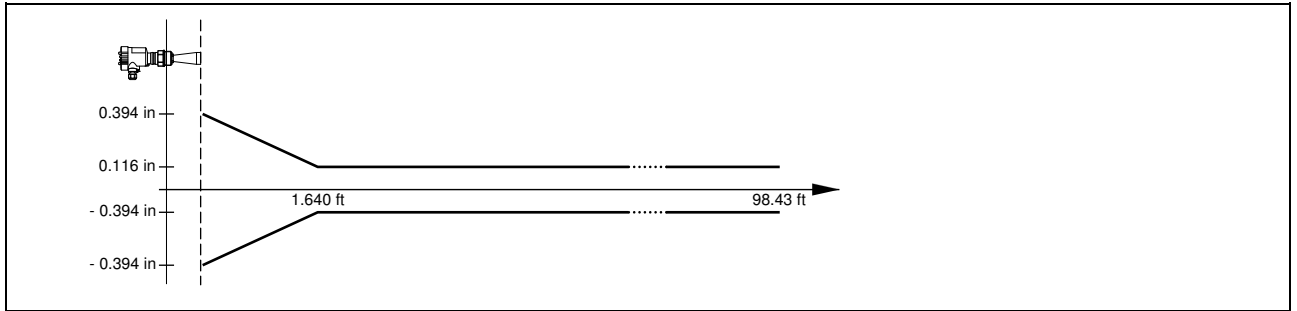


Fig. 34: Accuracy VEGAPULS 62 with horn antenna in Inch, measuring range in ft

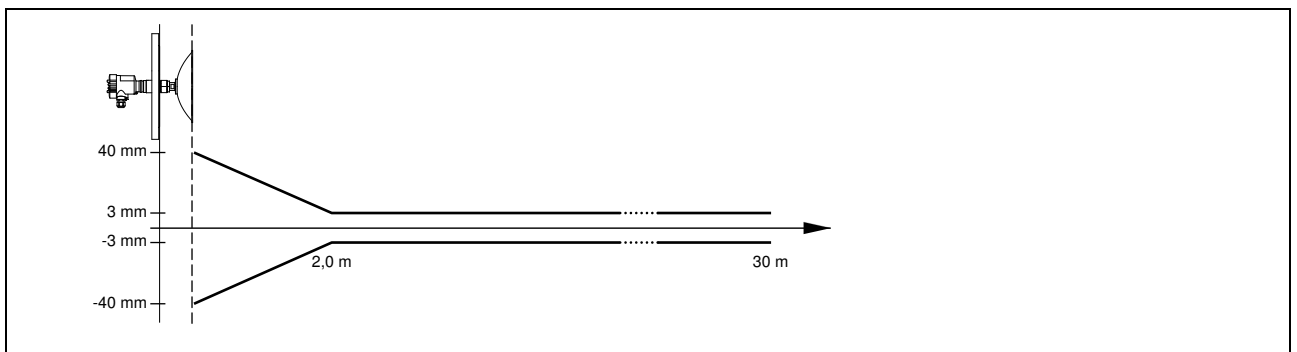


Fig. 35: Accuracy VEGAPULS 62 with parabolic antenna in mm, measuring range in m

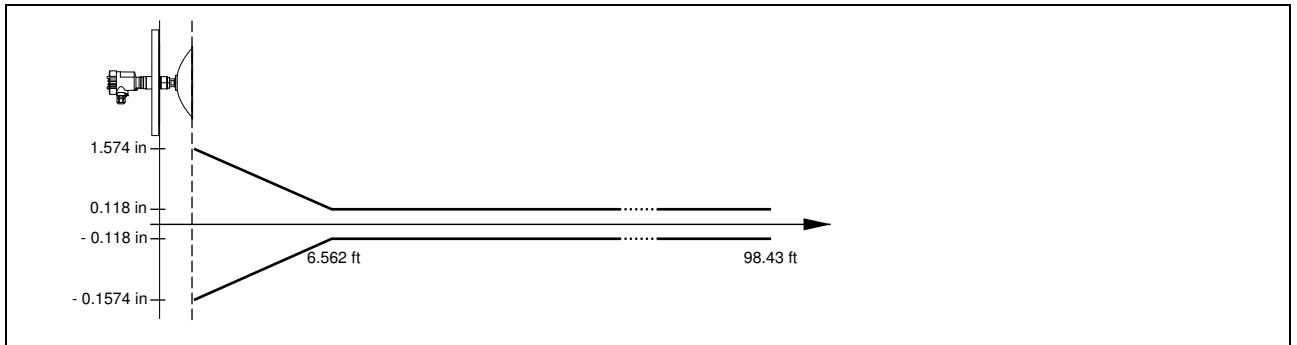


Fig. 36: Accuracy VEGAPULS 62 with parabolic antenna in Inch, measuring range in ft

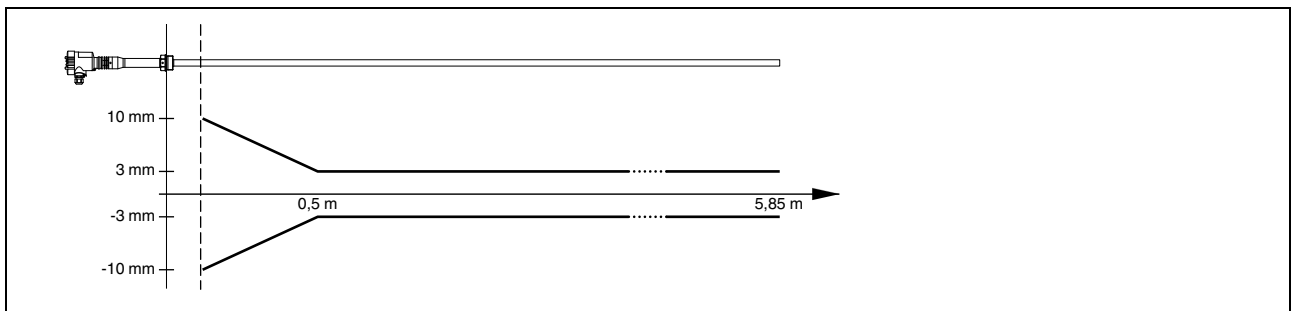


Fig. 37: Accuracy VEGAPULS 62 in standpipe version in mm, measuring range in m

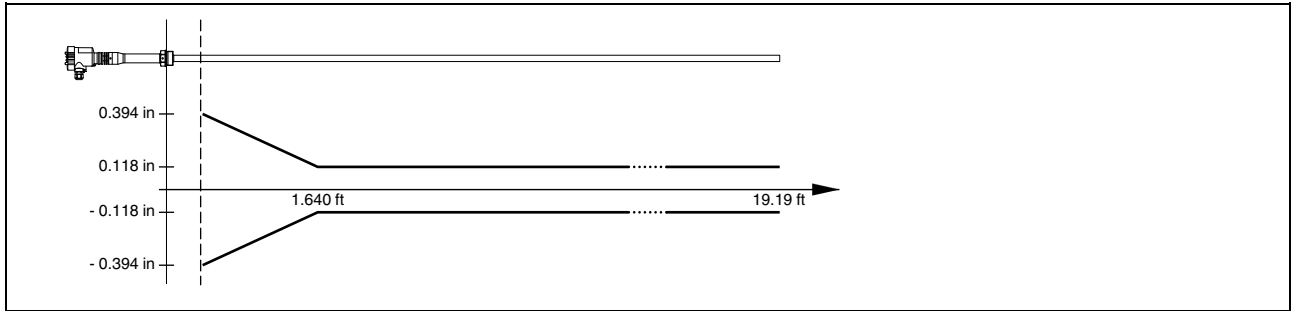


Fig. 38: Accuracy VEGAPULS 62 in standpipe version in Inch, measuring range in ft

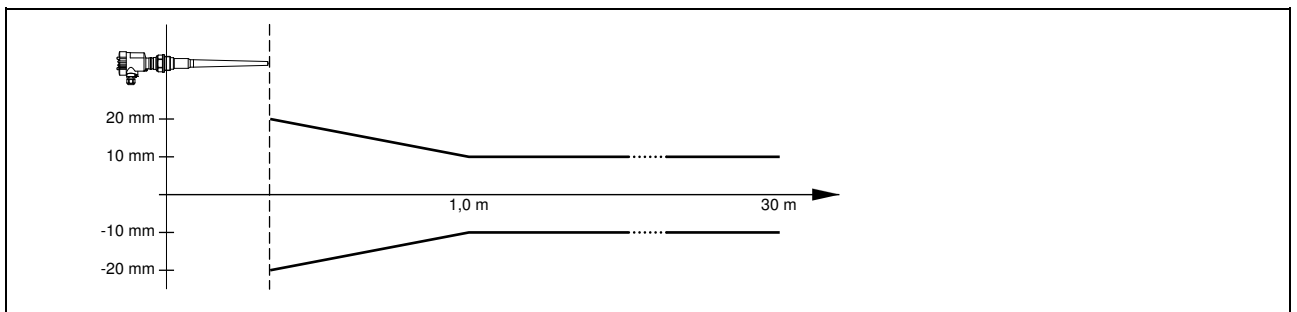


Fig. 39: Accuracy VEGAPULS 65 in mm, measuring range in m

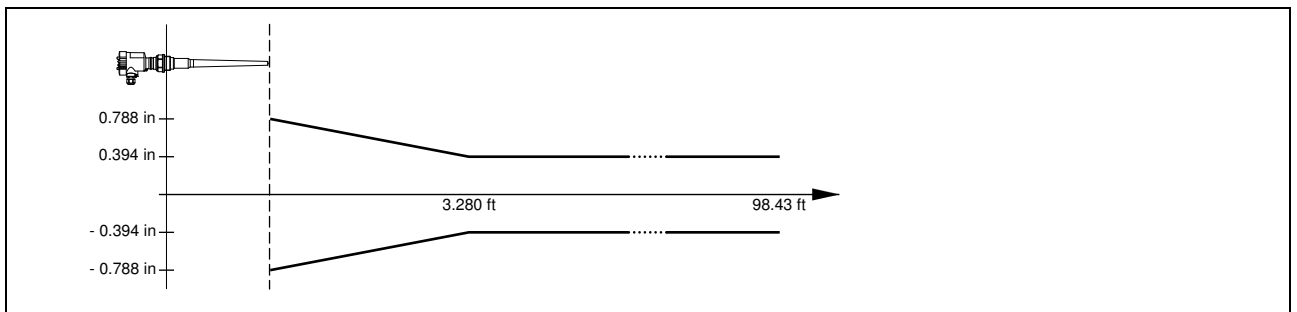


Fig. 40: Accuracy VEGAPULS 65 in Inch, measuring range in ft

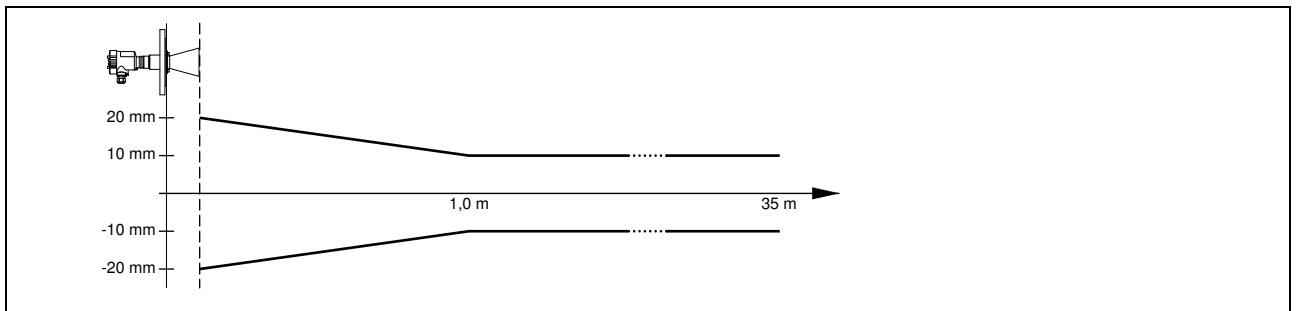


Fig. 41: Accuracy VEGAPULS 66 in mm, measuring range in m

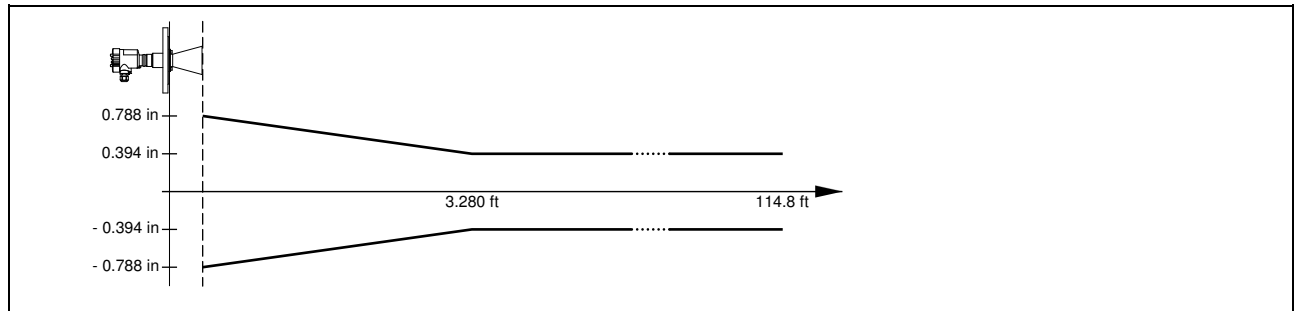


Fig. 42: Accuracy VEGAPULS 66 in Inch, measuring range in ft

Influence of the ambient temperature to the sensor electronics⁵⁾

Average temperature coefficient of the zero signal (temperature error) 0.03 %/10 K

Ambient conditions

Ambient, storage and transport temperature
 – Standard version -40 ... +80 °C (-40 ... +176 °F)
 – Version IP 66/IP 68, 1 bar with connection cable PE -20 ... +60 °C (-4 ... +140 °F)

Process conditions

Common data

Vibration resistance mechanical vibrations with 4 g and 5 ... 100 Hz⁶⁾

VEGAPULS 61

Vessel pressure -1 ... 3 bar/-100 ... 300 kPa (-14.5 ... 43.5 psi)
 Process temperature (measured on the process fitting) -40 ... +80 °C (-40 ... +176 °F)

VEGAPULS 62

Process temperature (measured on the process fitting), depending on seal and antenna system
 – FKM (Viton) -40 ... +130 °C (-40 ... +266 °F)
 – FKM (Viton) with temperature adapter -40 ... +200 °C (-40 ... +392 °F)
 – Kalrez 2035, 6230 (FDA) -15 ... +130 °C (+5 ... +266 °F)
 – Kalrez 2035, 6230 (FDA) with temperature adapter -15 ... +200 °C (+5 ... +392 °F)
 – Kalrez 6375 -20 ... +130 °C (-4 ... +266 °F)
 – Kalrez 6375 with temperature adapter -20 ... +200 °C (-4 ... +392 °F)
 Vessel pressure - horn antenna -1 ... 40 bar/-100 ... 4000 kPa (-14.5 ... 580 psi)
 Vessel pressure - parabolic antenna -1 ... 6 bar/-100 ... 6000 kPa (-14.5 ... 870 psi)

VEGAPULS 63

Vessel pressure with process fittings up to 2", DN 50 -1 ... 16 bar/-100 ... 1600 kPa (-14.5 ... 232 psi)
 Vessel pressure with process fittings from 3", DN 80 -0.8 ... 16 bar/-80 ... 1600 kPa (-11.6 ... 232 psi)
 Process temperature, depending on the material of the antenna encapsulation (measured on the process fitting)
 – TFM-PTFE encapsulated -40 ... +150 °C (-40 ... +302 °F)
 – TFM-PTFE encapsulated (low temperature version)⁷⁾ -170 ... +150 °C (-274 ... +302 °F)
 – PFA encapsulated -40 ... +150 °C (-40 ... +302 °F)
 – TFM-PTFE hygienically encapsulated, process seal FKM (e.g. Viton) -25 ... +130 °C (-13 ... +266 °F)
 – TFM-PTFE hygienically encapsulated, process seal EPDM -40 ... +130 °C (-40 ... +266 °F)

VEGAPULS 65

Vessel pressure
 – Screwed part PVDF -1 ... 3 bar/-100 ... 300 kPa (-14.5 ... 43.5 psi)
 – Screwed part and flange 316L -1 ... 16 bar/-100 ... 1600 kPa (-14.5 ... 232 psi)

⁵⁾ Relating to the nominal measuring range.
⁶⁾ Tested according to the regulations of German Lloyd, GL directive 2.
⁷⁾ Not suitable for SIL applications.

Process temperature (measured on the process fitting)

- For sockets 50 mm (1.969 in) and sockets 100 mm (3.937 in) and 250 mm (9.843 in) with PVDF screwed part -40 ... +130 °C (-40 ... +266 °F)
- Other versions -40 ... +150 °C (-40 ... +302 °F)

VEGAPULS 66

Process temperature (measured on the process fitting depending on process seal)

- FKM (Viton) -40 ... +80 °C (-40 ... +176 °F)
- FKM (Viton) with temperature adapter -40 ... +150 °C (-40 ... +302 °F)
- Kalrez 6375 -20 ... +150 °C (-4 ... +302 °F)
- graphite (antenna cone ceramic) -60 ... +250 °C (-76 ... +482 °F)
- graphite (antenna cone ceramic) with temperature adapter -60 ... +400 °C (-76 ... +752 °F)

Vessel pressure of the antenna cone (note nominal pressure stage of the flange!)

- PTFE -1 ... 40 bar/-100 ... 4000 kPa (-14.5 ... 580 psi) with PN 40
- Ceramic -1 ... 160 bar/-100 ... 16000 kPa (-14.5 ... 2321 psi) with PN 160

Electromechanical data - version IP 66/IP 67 and IP 66/IP 68; 0.2 bar

Cable entry/plug⁸⁾

- Single chamber housing
 - 1 x cable entry M20 x 1.5 (cable: ø 5 ... 9 mm), 1 x blind stopper M20 x 1.5
 - or:
 - 1 x closing cap M20 x 1.5; 1 x blind stopper M20 x 1.5
 - or:
 - 1 x closing cap ½ NPT, 1 x blind plug ½ NPT
 - or:
 - 1 x plug (depending on the version), 1 x blind stopper M20 x 1.5
- Double chamber housing
 - 1 x cable entry M20 x 1.5 (cable: ø 5 ... 9 mm), 1 x blind stopper M20 x 1.5; 1 x blind stopper M16 x 1.5 or optionally available with 1 x plug M12 x 1 for VEGADIS 61
 - or:
 - 1 x closing cap ½ NPT, 1 x blind stopper ½ NPT, 1 x blind stopper M16 x 1.5 or optionally available with 1 x plug M12 x 1 for VEGADIS 61
 - or:
 - 1 x plug (depending on the version), 1 x blind stopper M20 x 1.5; 1 x blind stopper M16 x 1.5 or optionally available with 1 x plug M12 x 1 for VEGADIS 61

Connection terminals

Spring-loaded terminals for wire cross-section up to 2.5 mm² (AWG 14)

Electromechanical data - version IP 66/IP 68, 1 bar

Cable entry

- Single chamber housing
 - 1 x IP 68 cable gland M20 x 1.5; 1 x blind stopper M20 x 1.5
 - or:
 - 1 x closing cap ½ NPT, 1 x blind plug ½ NPT
- Double chamber housing
 - 1 x P 68 cable entry M20 x 1.5; 1 x blind stopper M20 x 1.5; plug M12 x 1 for VEGADIS 61 (optional)
 - or:
 - 1 x closing cap ½ NPT, 1 x blind stopper ½ NPT, plug M12 x 1 for VEGADIS 61 (optional)

⁸⁾ Depending on the version M12x1, according to DIN 43650, Harting, Amphenol-Tuchel, 7/8" FF.

Connection cable	
- Wire cross-section	0.5 mm ²
- wire resistance	< 0.036 Ohm/m
- Tensile strength	> 1200 N (270 pounds force)
- Standard length	5 m (16.4 ft)
- Max. length	1000 m (3280 ft)
- Min. bending radius	25 mm (0.984 in) with 25 °C (77 °F)
- Diameter approx.	8 mm (0.315 in)
- Colour - standard PE	Black
- Colour - standard PUR	Blue
- Colour - Ex-version	Blue

Indicating and adjustment module

Power supply and data transmission	through the sensor
Indication	LC display in Dot matrix
Adjustment elements	4 keys
Protection	
- unassembled	IP 20
- mounted into the sensor without cover	IP 40
Materials	
- Housing	ABS
- Inspection window	Polyester foil

Supply voltage - 4 ... 20 mA/HART

Standard version

Supply voltage	
- Non-Ex instrument	14 ... 36 V DC
- EEx-ia instrument	14 ... 30 V DC
- EEx-d-ia instrument	20 ... 36 V DC
Supply voltage with lighted indicating and adjustment module ⁹⁾	
- Non-Ex instrument	20 ... 36 V DC
- EEx-ia instrument	20 ... 30 V DC
- EEx-d-ia instrument	20 ... 36 V DC
Permissible residual ripple	
- < 100 Hz	U _{ss} < 1 V
- 100 Hz ... 10 kHz	U _{ss} < 10 mV
Load	see diagram

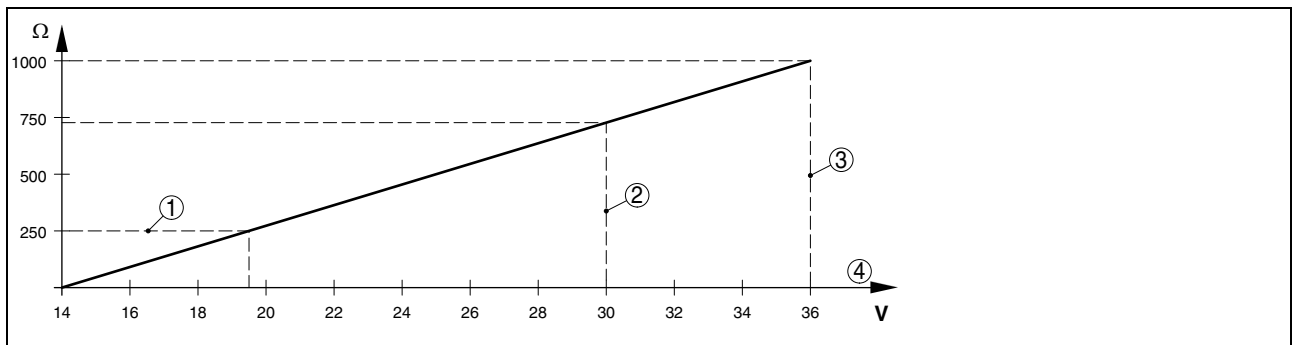


Fig. 43: Voltage diagram

- 1 HART load
- 2 Voltage limit EEx-ia instrument
- 3 Voltage limit non-Ex instrument
- 4 Supply voltage

⁹⁾ For instruments with national approvals such as e.g. according to FM or CSA only available at a later date.

Voltage supply - 4 ... 20 mA/HART four wire instrument

Supply voltage	
– Non-Ex and Exd instrument	20 ... 72 V DC, 20 ... 253 V AC, 50/60 Hz (with and without lighting of the indicating and adjustment module)
Max. power consumption	4 VA; 2.1 W

Voltage supply - Profibus PA

Supply voltage	
– Non-Ex instrument	9 ... 32 V DC
– EEx-ia instrument	9 ... 24 V DC
Supply voltage with lighted indicating and adjustment module ¹⁰⁾	
– Non-Ex instrument	12 ... 36 V DC
– EEx-ia instrument	12 ... 30 V DC
Power supply by/max. number of sensors	
– DP/PA segment coupler	max. 32 (max. 10 with Ex)
– VEGALOG 571 EP card	max. 15 (max. 10 with Ex)

Power supply - Foundation Fieldbus

Supply voltage	
– Non-Ex instrument	9 ... 32 V DC
– EEx-ia instrument	9 ... 24 V DC
Supply voltage with lighted indicating and adjustment module ¹¹⁾	
– Non-Ex instrument	12 ... 32 V DC
– EEx-ia instrument	12 ... 24 V DC
Power supply by/max. number of sensors	
– H1 power supply	max. 32 (max. 10 with Ex)

Electrical protective measures

Protection	
– Plastic housing	IP 66/IP 67
– Double chamber Alu-housing, four-wire instruments	IP 66/IP 67
– Alu and stainless steel housing, two-wire instruments	IP 66/IP 68 (0.2 bar) ¹²⁾
– Alu and stainless steel housing optional, two-wire instruments	IP 66/IP 68 (1 bar)
Overvoltage category	III
Protection class	
– two-wire, Profibus PA, Foundation Fieldbus	II
– four-wire	I

Approvals¹³⁾¹⁴⁾¹⁵⁾

ATEX ia	ATEX II 1G, 1/2G, 2G EEx ia IIC T6; ATEX II 1G, 1/2G, 2G EEx ia IIC T5+ATEX II 1/2D IP6X T6
ATEX D	ATEX II 1/2 D IP6X T
ATEX ia + D	ATEX II 1G, 1/2G, 2G EEx ia IIC T5+ATEX II 1/2D IP6X T6
ATEX d	ATEX II 1/2G, 2G EExd ia IIC T6
ATEX d + D	ATEX II 1/2G, 2G EExd ia IIC T5+ATEX II 1/2D IP6X T6
IEC ia	IEC Ex ia IIC T6
IEC d	IEC Exd ia IIC T6
IEC Ex	Ex tD A20/A21 IP66 T, A21
FM	FM Cl.I, Div2 (NI)+Cl.II, III, Div1 (DIP); FM Cl.I-III, Div 1 (IS); FM Cl.I-III, Div 1(IS)+Cl.I-III, Div 1 Gr.C-G (XP)
CSA	CSA Cl.I, Div2 (NI)+Cl.II, III, Div1 (DIP); CSA Cl.I-III, Div 1 (IS); CSA Cl.I-III, Div 1(IS)+Cl.I-III, Div 1 Gr.C-G (XP)
Ship approvals	GL, LRS, ABS, CCS, RINA
Others	WHG

¹⁰⁾ For instruments with national approvals such as e.g. according to CSA only available at a later date.

¹¹⁾ For instruments with national approvals such as e.g. according to CSA only available at a later date.

¹²⁾ A suitable cable is the prerequisite for maintaining the protection class.

¹³⁾ Depending on the instrument type.

¹⁴⁾ Deviating data in Ex applications: see separate safety instructions.

¹⁵⁾ You can find detailed information under www.vega.com.

CE conformity

EMC (89/336/EWG)	Emission EN 61326: 1997 (class A), susceptibility EN 61326: 1997/A1: 1998
R & TTE directive	R & TTE directive: I-ETS 300-440 Expert Opinion No. 05-111723, Notified Body No. 0700
LVD (73/23/EWG)	EN 61010-1: 2001

Functional safety (SIL)

You can find detailed information in the Safety Manual of VEGAPULS or under www.vega.com.

Functional safety according to IEC 61508-4

- Single channel architecture (1oo1D) up to SIL2
 - double channel diversitary redundant architecture (1oo2D) up to SIL3
-

FCC conformity (only for USA/Canada)

Conformity to part 15 of the FCC regulations

Environmental instructions

VEGA environment management system certified according to DIN EN ISO 14001
You can find detailed information under www.vega.com.

7 Dimensions

Housing in protection IP 66/IP 67 and IP 66/IP 68; 0.2 bar

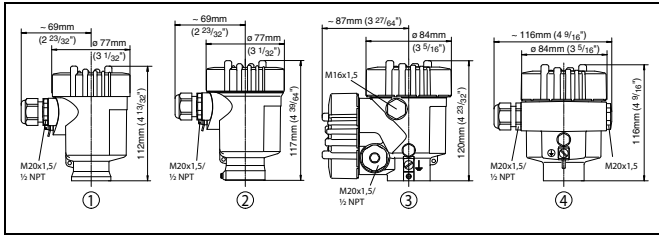


Fig. 44: Housing versions in protection IP 66/IP 67 and IP 66/IP 68; 0.2 bar, with integrated indicating and adjustment module the housing is 9 mm (1/64") higher

- 1 Plastic housing
- 2 Stainless steel housing
- 3 Aluminium double chamber housing
- 4 Aluminium housing

Housing in protection IP 66/IP 68, 1 bar

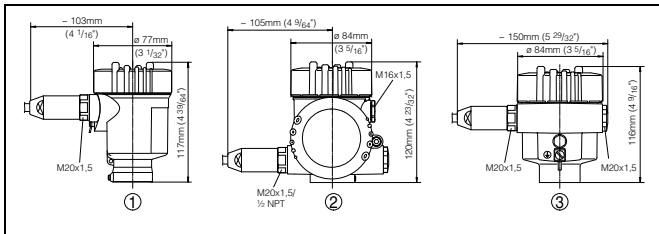


Fig. 45: Housing versions in protection IP 66/IP 68, 1 bar, with integrated indicating and adjustment module the housing is 9 mm (1/64") higher

- 1 Stainless steel housing
- 2 Aluminium double chamber housing
- 3 Aluminium housing

VEGAPULS 61 - encapsulated antenna system in threaded version

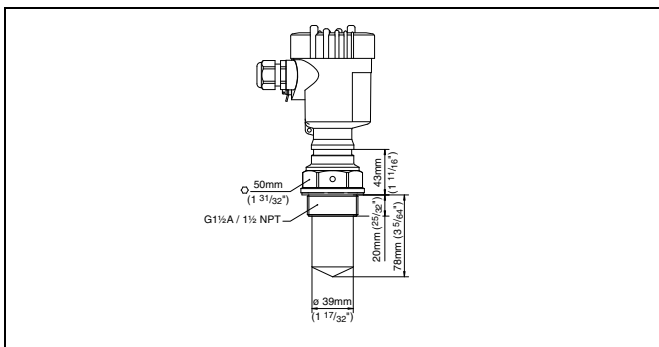


Fig. 46: VEGAPULS- encapsulated antenna system in threaded version G1 1/2 A and 1 1/2 NPT

VEGAPULS 61 - encapsulated antenna system with hygienic fitting

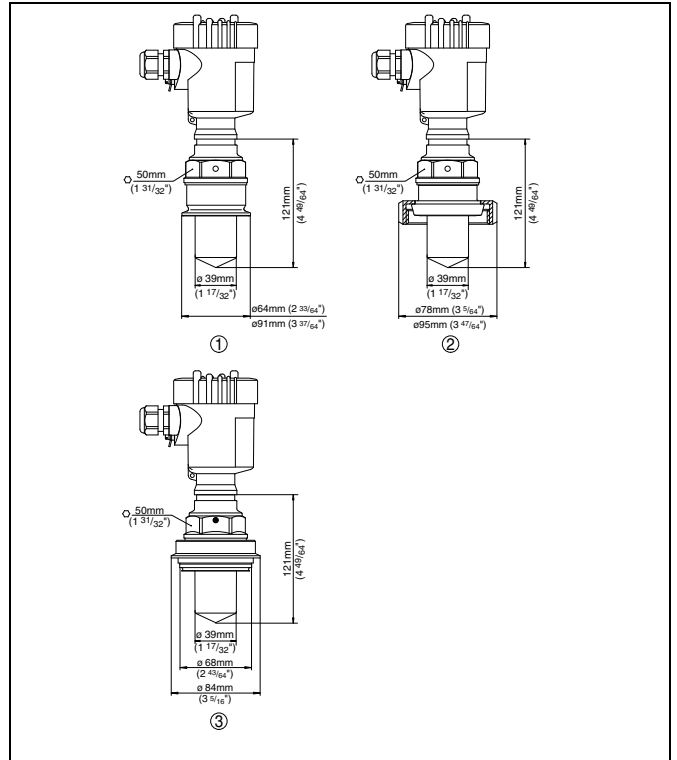


Fig. 47: VEGAPULS - encapsulated antenna system in threaded version with hygienic fitting

- 1 Tri-Clamp 2" and 3"
- 2 Bolting according to DIN 11851 DN 50 and DN 80
- 3 Tuchenhausen Varivent DN 32

VEGAPULS 61 - plastic horn antenna with mounting strap

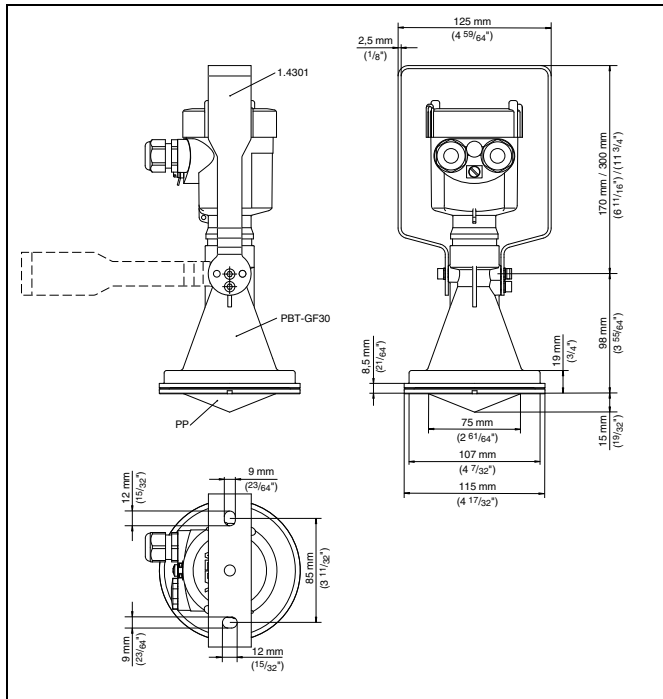


Fig. 48: VEGAPULS - plastic horn antenna with mounting strap

VEGAPULS 61 - plastic horn antenna with compression flange

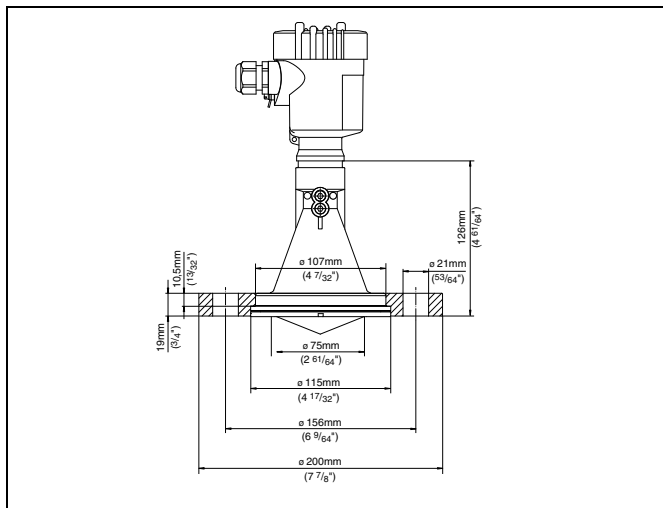


Fig. 49: VEGAPULS - plastic horn antenna with compression flange DN 80/3"/JIS80

VEGAPULS 62 - horn antenna in threaded version

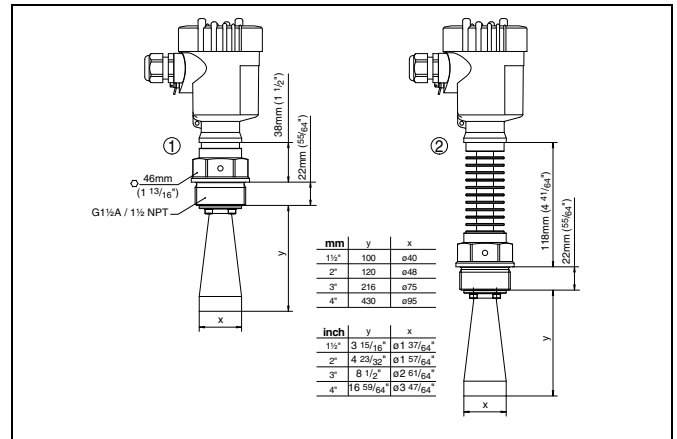


Fig. 50: VEGAPULS 62 - horn antenna in threaded version

- 1 Standard
- 2 with temperature adapter

VEGAPULS 62 - horn antenna in threaded version with purging air connection

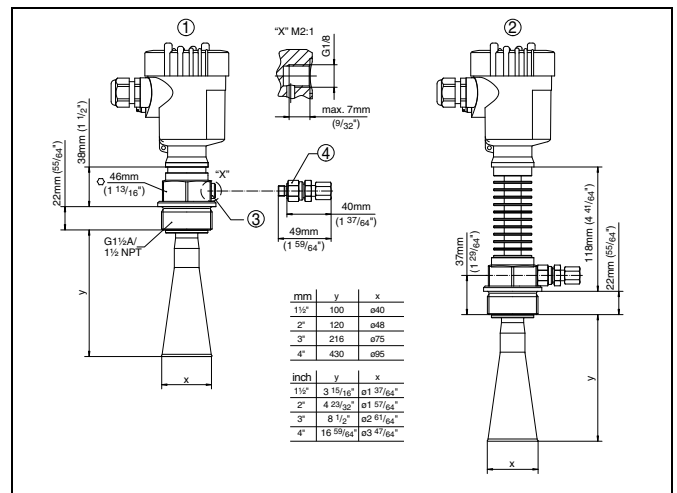


Fig. 51: VEGAPULS 62 - horn antenna in threaded version with purging air connection

- 1 Standard
- 2 with temperature adapter
- 3 Purging air connection G1/2 A for mounting of a suitable adapter
- 4 Reflux valve - attached (with non-Ex option, with Ex in the scope of delivery)

VEGAPULS 62 - horn antenna in threaded version with antenna extension

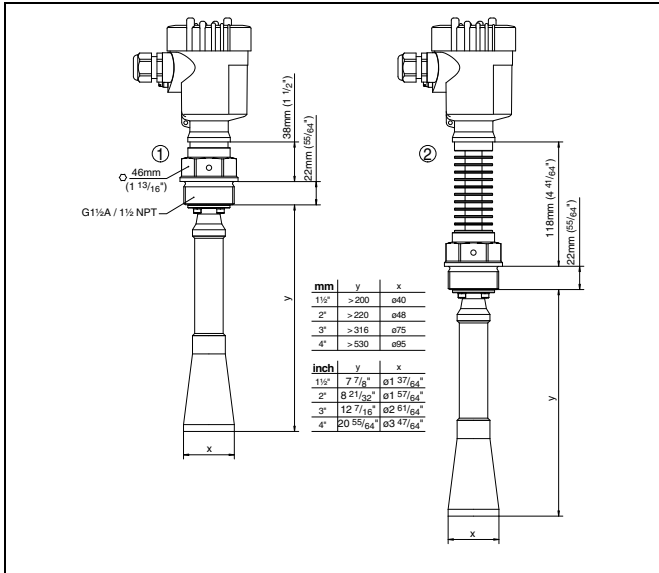


Fig. 52: VEGAPULS 62 - horn antenna in threaded version with purging air connection and antenna extension¹⁶⁾

- 1 Standard
- 2 with temperature adapter

VEGAPULS 62 - horn antenna in flange version

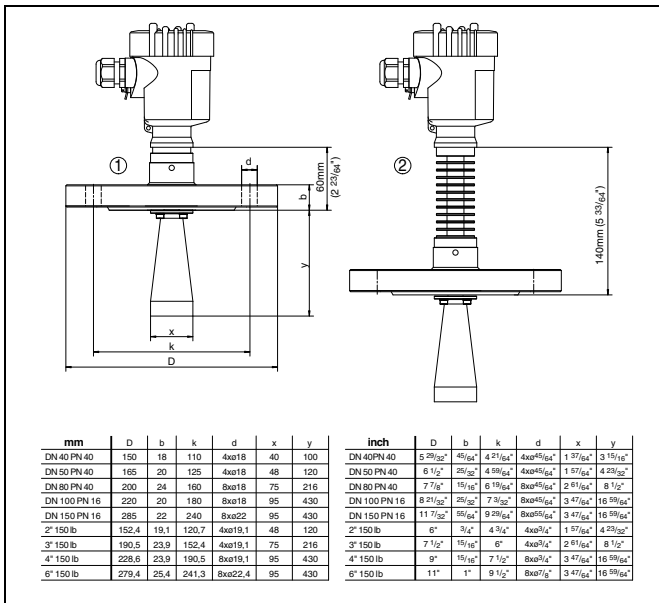


Fig. 53: VEGAPULS 62 - horn antenna in flange version

- 1 Standard
- 2 with temperature adapter

VEGAPULS 62 - parabolic antenna in threaded version

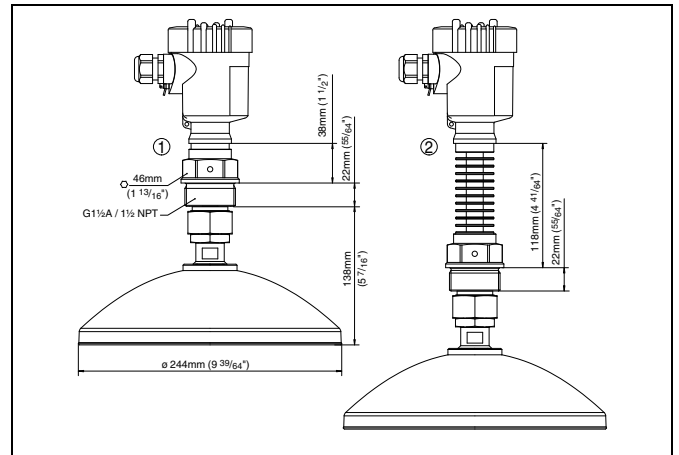


Fig. 54: VEGAPULS 62 - parabolic antenna in threaded version

- 1 Standard
- 2 with temperature adapter

VEGAPULS 62 - Standpipe version with thread

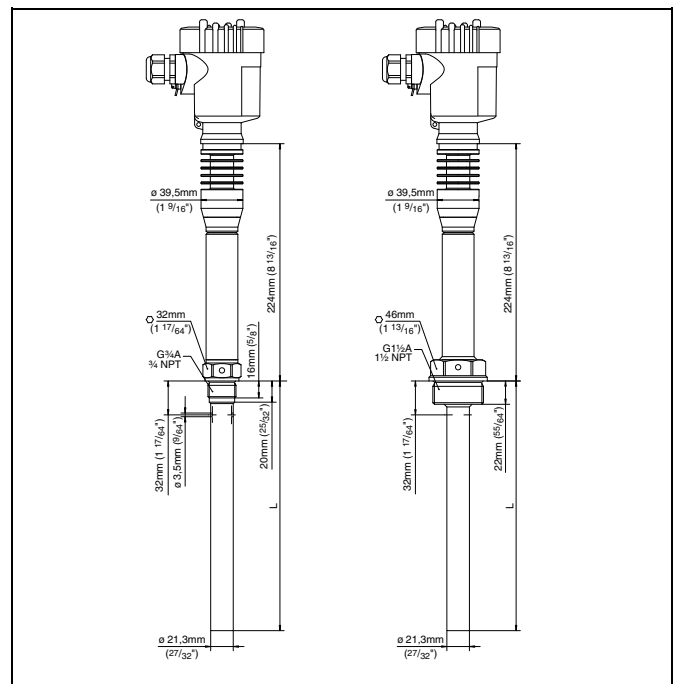


Fig. 55: VEGAPULS 62 - Standpipe version with thread¹⁷⁾

¹⁶⁾ An antenna extension causes a reduction of sensitivity at close range in dependence on product properties. A suitable support for the antenna extension must be provided as required by its length.

¹⁷⁾ The plant operator must provide a suitable support for the standpipe depending on the length and the process conditions.

VEGAPULS 63 - flange version

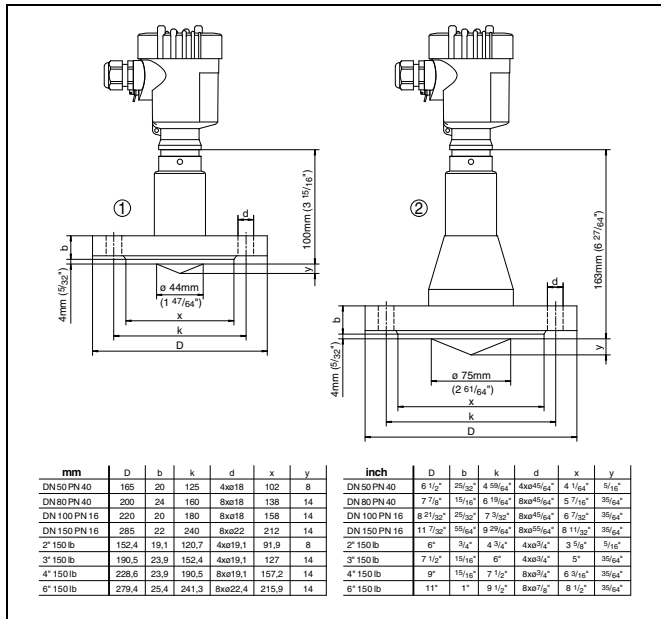


Fig. 56: VEGAPULS 63 - flange version

- 1 Flange version - flange size DN 50
- 2 Flange version - flange size from DN 80

VEGAPULS 63 - low temperature flange version

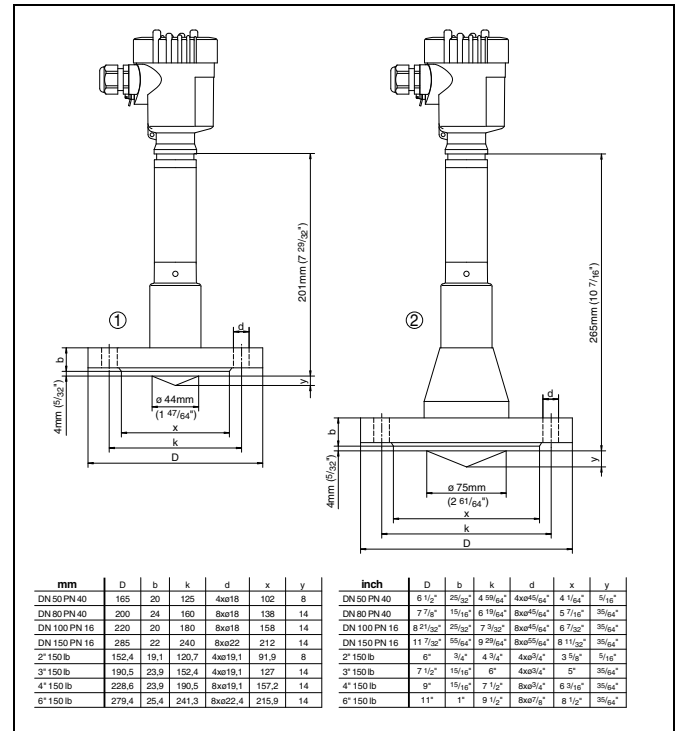


Fig. 58: VEGAPULS 63 - low temperature flange version

- 1 DN 50, 2"
- 2 DN 80 ... DN 150, 3" ... 6"
- d Diameter and number of holes in the flange

VEGAPULS 63 - hygienic fitting

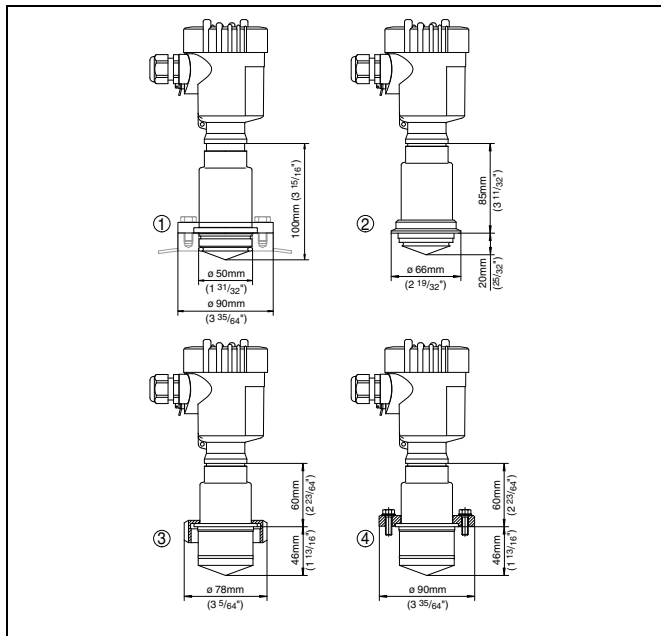


Fig. 57: VEGAPULS 63 - hygienic fitting

- 1 NeumoBiocontrol
- 2 Tuchenhausen Varivent DN 25
- 3 Hygienic version LA
- 4 Hygienic version LB

VEGAPULS 65 - threaded version

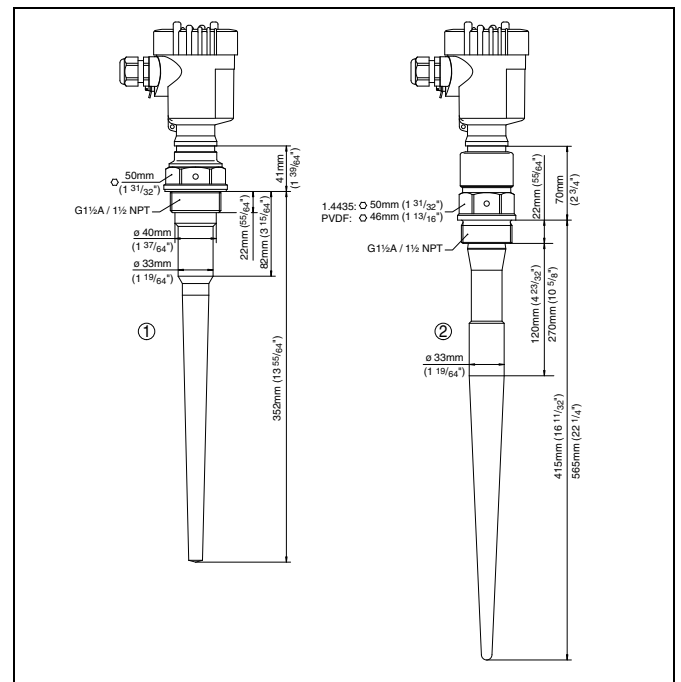


Fig. 59: VEGAPULS 65 - threaded version

- 1 For socket height up to 50 mm (1.969 in)
- 2 For socket heights up to 100 mm (3.937 in) or up to 250 mm (9.843 in)

VEGAPULS 65 - flange version

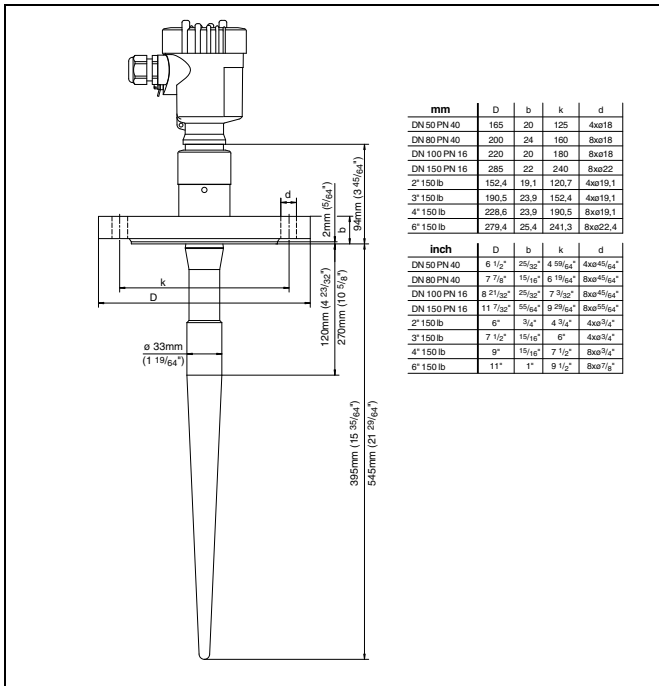


Fig. 60: VEGAPULS 65 - flange version for socket height up to 100 mm (3.937 in) or up to 250 mm (9.843 in)

VEGAPULS 66 - standard version

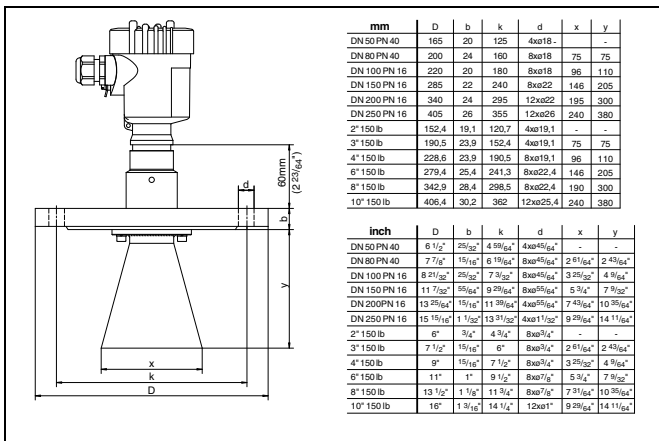


Fig. 61: VEGAPULS 66 - standard version

VEGAPULS 66 - standard version with purging air connection

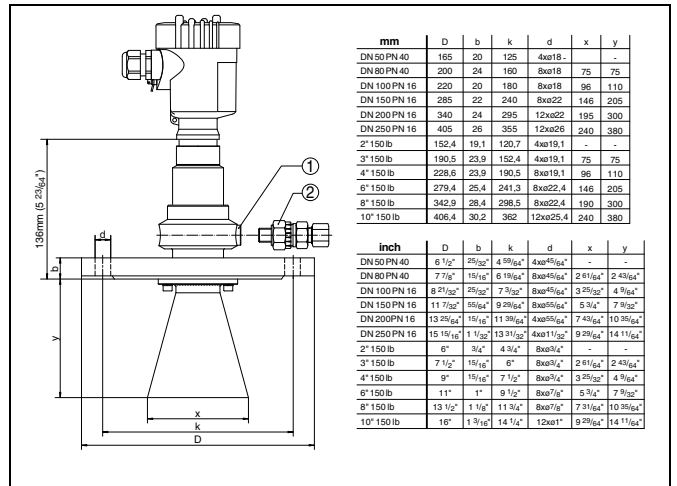


Fig. 62: VEGAPULS 66 - standard version with purging air connection

- 1 Rinsing air connection G1/4 A for mounting of an own adapter
- 2 Reflux valve - attached (with non-Ex option, with Ex in the scope of delivery)

VEGAPULS 66 - high temperature version

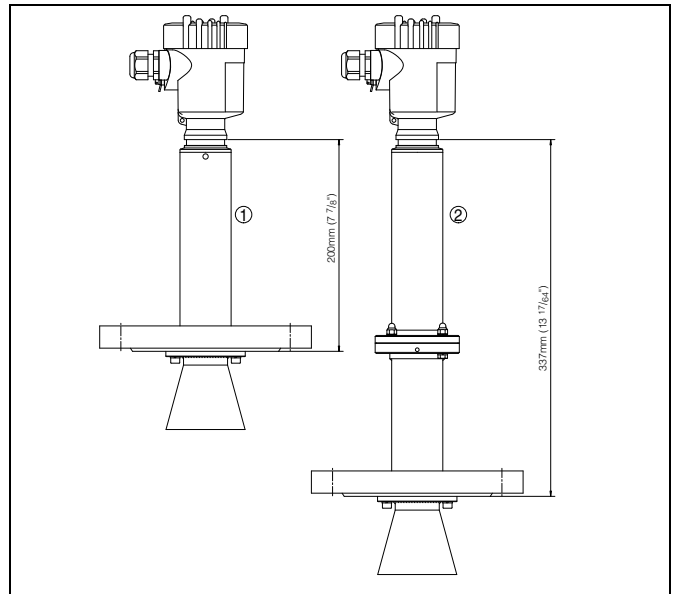


Fig. 63: VEGAPULS 66 - high temperature version

- 1 For process temperatures up to 250 °C (482 °F)
- 2 For process temperatures up to 400 °C (752 °F)

VEGAPULS 66 - standpipe version

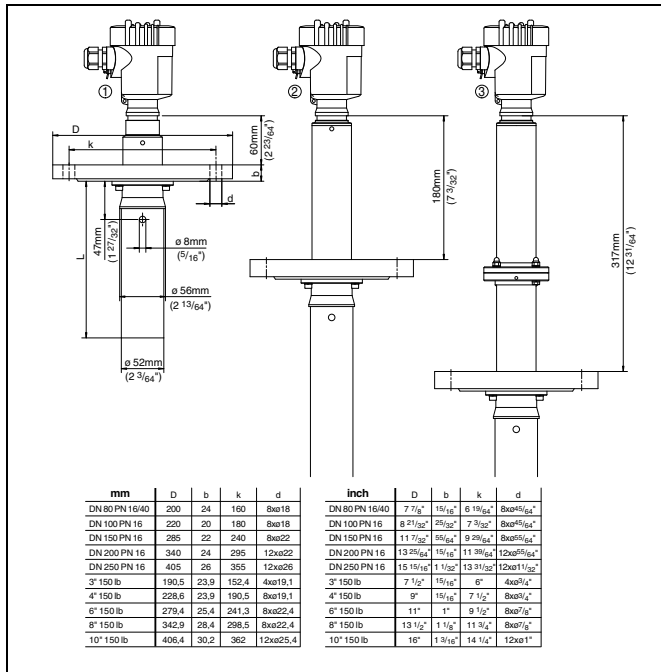


Fig. 64: VEGAPULS 66 - standpipe version¹⁸⁾

- 1 Standard version
- 2 For process temperatures up to 250 °C (482 °F)
- 3 For process temperatures up to 400 °C (752 °F)

¹⁸⁾ The plant operator must provide a suitable support for the standpipe depending on the length and the process conditions.



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