



Product Information

Radar

Level measurement in liquids

VEGAPULS WL 61, 61, 62, 63, 65, 66

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/downloads under "Approvals" and which comes with every instrument. In hazardous areas you should take note of the corresponding 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 Measuring principle

Measuring principle

Extremely short microwave pulses are emitted by the antenna system in the direction of the measured product, reflected by the product surface and received back again by the antenna system. They propagate 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 allows reliable and precise measurement of the extremely short signal running times. The radar sensors operate with low transmission power in the C or K band frequency range. The proven ECHOFOX signal processing software selects the correct level echo out of a large number of interfering reflections. An adjustment with empty and full vessel is not necessary.

Applications in liquids

Two different emitting frequencies are available for these applications. The compact, high frequency K-band sensors are particularly suitable for applications where high accuracy is required. Excellent signal focussing is achieved even with small antennas.

Low frequency C-band sensors are able to penetrate foam and strong condensation and are thus suitable for very difficult process conditions. Completely unaffected by vapour, gas composition, pressure and temperature changes, the sensors reliably detect the surface of widely different products.

Input variable

The measured quantity is the distance between process fitting of the sensor and product surface. Depending on the sensor version, the reference plane is the seal surface on the hexagon or the lower side of the flange.

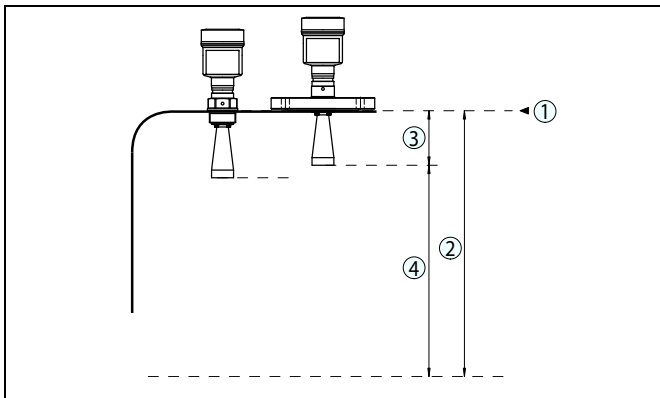


Fig. 1: Data of the input variable with VEGAPULS 62

- 1 Reference plane
- 2 Measured variable, max. measuring range
- 3 Antenna length
- 4 Useful measuring range

2 Type overview

VEGAPULS WL 61



VEGAPULS 61



VEGAPULS 62



Applications	Water processing, pump stations, storm water overflow tank, flow measurement in open flumes and level monitoring	Corrosive liquids in small vessels under easy process conditions	Storage tanks and process vessels under extremely difficult process conditions
Max. measuring range	15 m (49.21 ft)	35 m (114.8 ft)	35 m (114.8 ft)
Antenna/Material	Plastic horn antenna	Plastic horn antenna/completely PVDF encapsulated	Horn antenna or standpipe antenna ½"/316L
Process fitting/Material	Thread G1½ A/PBT or mounting strap/316L	Thread G1½ A/PVDF, mounting strap/316L or flange/PP	Thread G1½ A/316L according to DIN 3852-A or flange/316L, Hastelloy
Process temperature	-40 ... +80 °C (-40 ... +176 °F)	-40 ... +80 °C (-40 ... +176 °F)	-196 ... +450 °C (-321 ... +842 °F)
Process pressure	-1 ... +2 bar/-100 ... +200 kPa (-14.5 ... +29.0 psi)	-1 ... +3 bar/-100 ... +300 kPa (-14.5 ... +43.5 psi)	-1 ... +160 bar/-100 ... +16000 kPa (-14.5 ... +2320 psig)
Deviation	±2 mm	±2 mm	±2 mm
Frequency range	K-band	K-band	K-band
Signal output	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • Profibus PA • Foundation Fieldbus 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • 4 ... 20 mA/HART - four-wire • Profibus PA • Foundation Fieldbus • Modbus, Levelmaster protocol 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • 4 ... 20 mA/HART - four-wire • Profibus PA • Foundation Fieldbus • Modbus, Levelmaster protocol
Indication/Adjustment	<ul style="list-style-type: none"> • PACTware • VEGADIS 62 	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 81 • VEGADIS 62 	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 81 • VEGADIS 62
Approvals	<ul style="list-style-type: none"> • ATEX • IEC 	<ul style="list-style-type: none"> • ATEX • IEC • Shipbuilding • Overfill protection • FM • CSA • Gost 	<ul style="list-style-type: none"> • ATEX • IEC • Shipbuilding • Overfill protection • FM • CSA • Gost

VEGAPULS 63



VEGAPULS 65



VEGAPULS 66



Applications	Aggressive liquids under extremely difficult process conditions	Aggressive liquids under easy process conditions	Storage tanks and process vessels under extremely difficult process conditions
Max. measuring range	35 m (114.83 ft)	35 m (114.83 ft)	35 m (114.83 ft)
Antenna, material	Completely encapsulated antenna system/PTFE, PFA or PVDF	Rod antenna, PVDF or PTFE encapsulated, PFA plated	Horn antenna or standpipe antenna 2", 316L
Process fitting/Material	Flange or hygienic flange/316L, Hastelloy	Thread G1½ A/PVDF, 316L similar to DIN 3852-A-B, thread G1½ A according to DIN 3852-A/PVDF, 316L or flange/PTFE clad	Flange/316L, Hastelloy
Process temperature	-196 ... +200 °C (-321 ... +392 °F)	-40 ... +150 °C (-40 ... +302 °F)	-60 ... +400 °C (-76 ... +752 °F)
Process pressure	-1 ... +16 bar/-100 ... +1600 kPa (-14.5 ... +232 psig)	-1 ... +16 bar/-100 ... +1600 kPa (-14.5 ... +232 psig)	-1 ... +160 bar/-100 ... +16000 kPa (-14.5 ... +2321 psi)
Deviation	±2 mm	±8 mm	±8 mm
Frequency range	K-band	C-band	C-band
Signal output	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • 4 ... 20 mA/HART - four-wire • Profibus PA • Foundation Fieldbus • Modbus, Levelmaster protocol 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • 4 ... 20 mA/HART - four-wire • Profibus PA • Foundation Fieldbus • Modbus, Levelmaster protocol 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART two-wire • 4 ... 20 mA/HART - four-wire • Profibus PA • Foundation Fieldbus • Modbus, Levelmaster protocol
Indication/Adjustment	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 81 • VEGADIS 62 	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 81 • VEGADIS 62 	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 81 • VEGADIS 62
Approvals	<ul style="list-style-type: none"> • ATEX • IEC • Shipbuilding • Overfill protection • FM • CSA • Gost 	<ul style="list-style-type: none"> • ATEX • IEC • Shipbuilding • Overfill protection • FM • CSA 	<ul style="list-style-type: none"> • ATEX • IEC • Shipbuilding • Overfill protection • FM • CSA

3 Instrument selection

Application areas

VEGAPULS WL 61

The radar sensor VEGAPULS WL 61 is particularly suitable for use in pump stations and storm water overflow tanks, for flow measurement in open flumes as well as for gauge measurement. The high housing protection rating of the instrument allows outdoor mounting.

VEGAPULS 61

VEGAPULS 61 is suitable for applications in liquids in smaller vessels under ordinary process conditions. There are application possibilities in nearly all areas of industry.

The version with encapsulated antenna system is particularly suitable for level measurement of aggressive liquids in small vessels. The version with plastic horn antenna is particularly suitable for flow measurement in open flumes or gauge measurement in waters.

VEGAPULS 62

VEGAPULS 62 is suitable for applications in liquids in storage tanks and process vessels under difficult process conditions. Application possibilities can be found in the chemical industry, in environmental and recycling technology as well as in the petrochemical industry.

The version with horn antenna is particularly suitable for storage tanks and process vessels for measurement of products like solvents, hydrocarbons and fuels. The version with parabolic antenna is particularly suitable for measurement of products with low ϵ_r value at large measuring distances.

VEGAPULS 63

The VEGAPULS 63 is suitable for the measurement of aggressive liquids or applications with special hygienic requirements. Application possibilities can be found in the chemical industry as well as in the food processing and pharmaceutical sector.

VEGAPULS 65

The VEGAPULS 65 is suitable for vessels with liquids under easy process conditions with small process fitting. The application possibilities are in virtually all industries.

VEGAPULS 66

The VEGAPULS 66 is suitable for the measurement of liquids under difficult and extreme process conditions such as buildup, condensation and foam generation as well as strong product movements. The application possibilities are in the chemical industry, in the environmental and recycling technology as well as in the petrochemistry.

Applications

Level measurement in vessels

For level measurement 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.

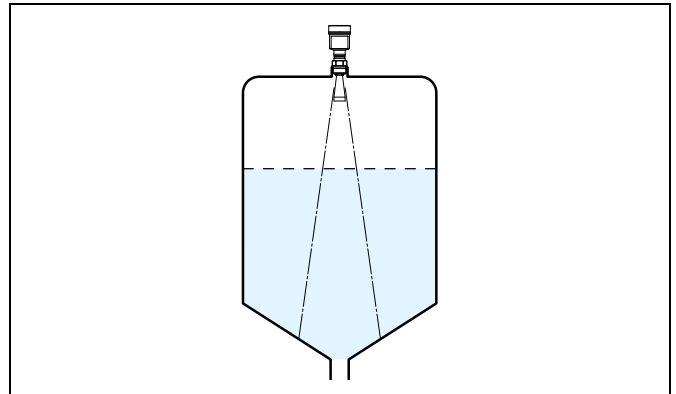


Fig. 2: Level measurement in vessels with conical bottom

Measurement in a surge pipe

When using a surge pipe in a vessel, influences from vessel installations and turbulences can be excluded. Under these prerequisites, the measurement of products with low dielectric values (ϵ_r value ≥ 1.6) is possible. In very adhesive products, measurement in a surge pipe is not recommended.

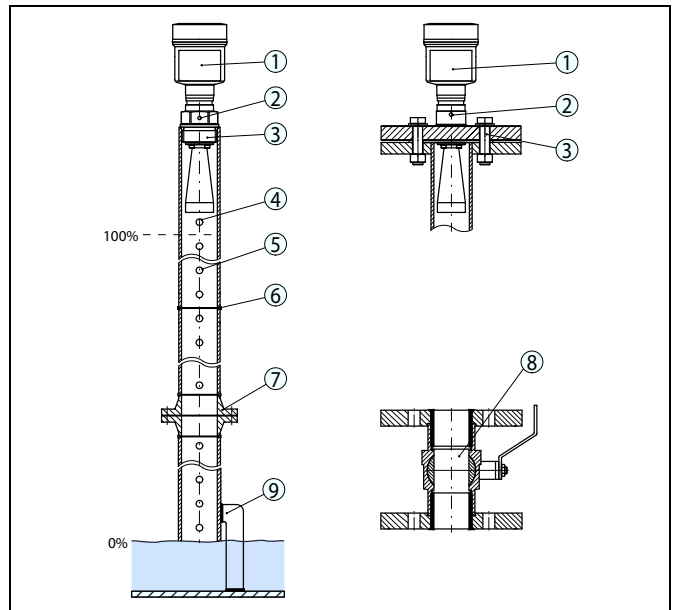


Fig. 3: Configuration surge pipe

- 1 Radar sensor
- 2 Marking for the polarisation
- 3 Thread or flange on the instrument
- 4 Vent hole
- 5 Holes
- 6 Weld joint
- 7 Welding neck flange
- 8 Ball valve with complete opening
- 9 Fastening of the surge pipe

Measurement in difficult applications

The electronics version with increased sensitivity enables use of the instrument also in applications with very poor reflective properties and products with low ϵ_r value.

Flow measurement

Flow measurement in open flumes with a defined constriction, such as e.g. a rectangular overflow, can be realized with a level measurement.

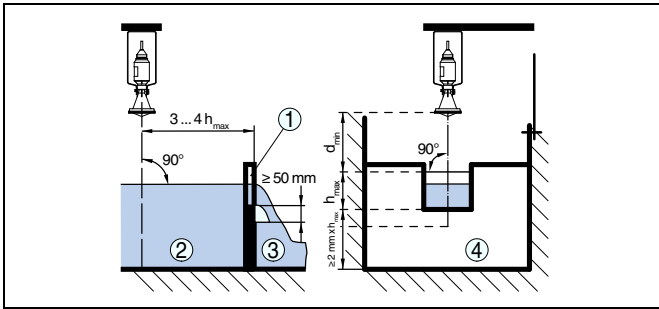


Fig. 4: Flow measurement with rectangular overflow: d_{min} , minimum distance of the sensor; h_{max} = max. filling of the rectangular overflow



- 1 Overflow orifice (side view)
- 2 Headwater
- 3 Tail water
- 4 Overflow orifice (view from bottom water)



4 Selection criteria




		VEGA-PULS					
		WL 61	61	62	63	65	66
Vessel	Small vessels	●	●	–	●	–	–
	Storage tanks	●	●	●	●	●	●
	Process vessels	–	–	●	●	–	●
Process	Easy process conditions	●	●	●	●	●	●
	Extremely difficult process conditions	–	–	●	●	–	●
	Aggressive liquids	–	●	–	●	●	●
	Bubble or foam generation	–	–	–	–	●	●
	Wave movements at the surface	–	–	–	–	●	●
	Steam or condensation	–	–	–	–	●	●
	Buildup	–	–	–	–	●	●
	Flow measurement	●	●	●	–	–	–
Installation	Front flush installation	●	●	–	●	–	–
	Threaded fittings	●	●	●	–	●	–
	Flange connections	●	●	●	●	●	●
	Hygienic fittings	–	●	–	●	●	–
	Mounting strap	●	●	–	–	–	–
Antenna	Antenna extension	–	–	●	–	–	●
	Standpipe antenna	–	–	●	–	–	●
	Narrow transmission lobe	–	–	●	●	–	–
	Measurement in a bypass tube or surge pipe	●	●	●	●	–	●
	Rinsing air connection	–	–	●	–	–	●
Suitability for industry-specific applications	Chemical	–	–	●	●	–	–
	Power generation	●	●	–	●	–	–
	Foodstuffs	–	–	–	●	–	–
	Metal production	–	–	●	–	–	–
	Offshore	–	–	–	–	–	●
	Paper	–	●	●	●	–	–
	Petrochemical	–	–	●	●	–	●
	Pharmaceutical	–	●	–	●	–	–
	Shipbuilding	–	–	–	●	–	●
	Environment and recycling industry	–	–	●	●	–	●
	Water, waste water	●	●	–	–	–	●
	Cement industry	–	–	●	–	–	–

5 Housing overview

The following housings apply to VEGAPULS 61, 63 and 66:

Plastic PBT		
Protection rating	IP 66/IP 67	IP 66/IP 67
Version	Single chamber	Double chamber
Application area	Industrial environment	Industrial environment

Aluminium		
Protection rating	IP 66/IP 67, IP 66/IP 68 (1 bar)	IP 66/IP 67, IP 66/IP 68 (1 bar)
Version	Single chamber	Double chamber
Application area	Industrial environment with increased mechanical stress	Industrial environment with increased mechanical stress

Stainless steel 316L			
Protection rating	IP 66/IP 67	IP 66/IP 67, IP 66/IP 68 (1 bar)	IP 66/IP 67, IP 66/IP 68 (1 bar)
Version	Single chamber, electropolished	Single chamber, precision casting	Double chamber, precision casting
Application area	Aggressive environment, food processing, pharmaceutical	Aggressive environment, extreme mechanical stress	Aggressive environment, extreme mechanical stress

6 Mounting

Mounting examples

The following illustrations show mounting examples and measurement setups.

Pump shaft

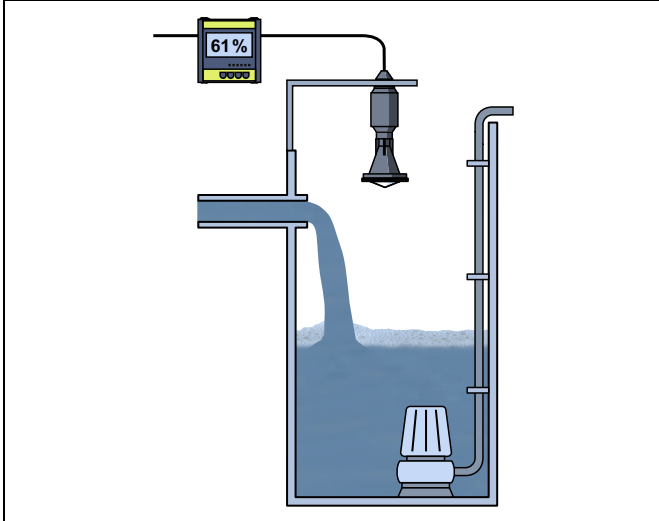


Fig. 5: Level measurement in the pump shaft with VEGAPULS WL 61

The strongly focussed measuring signal of VEGAPULS WL 61 offers considerable advantages particularly in tight spaces. The sensor operates reliably even with foam and buildup on the shaft wall.

Acid tank

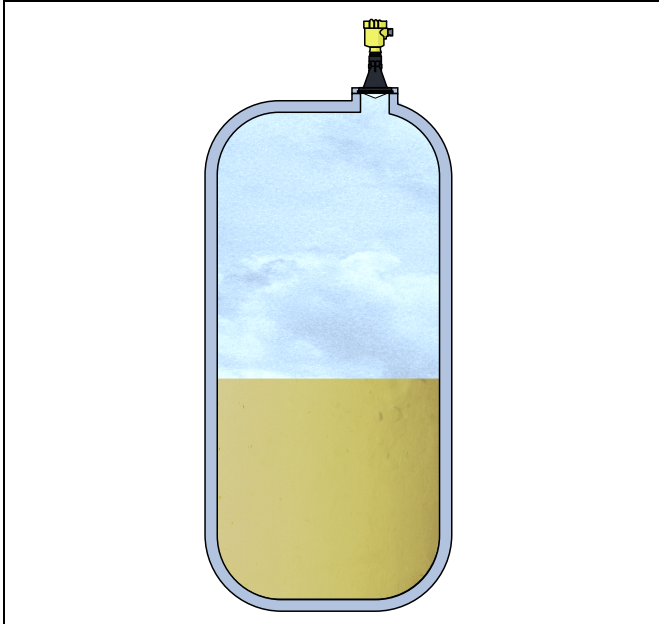


Fig. 6: Level measurement in an acid tank with VEGAPULS 61

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.

Reactor

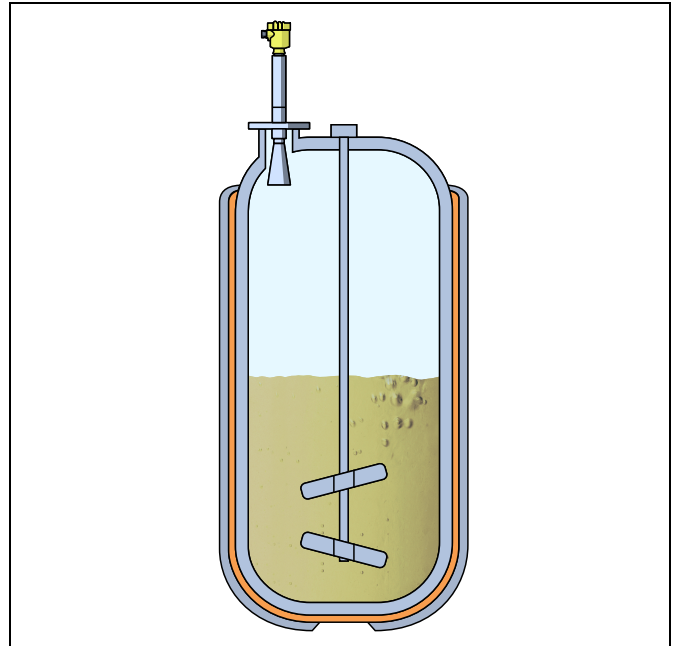


Fig. 7: Level measurement in a reactor with VEGAPULS 62

For the production of resins, different basic substances are mixed with solvents and a reaction is caused by adding process heat.

Non-contact measurement with the radar sensor VEGAPULS 62 is ideal for use in the production of reaction products. Since the measurement is performed without direct contact to the medium, virtually no buildup forms on the sensor.

Sugar evaporator

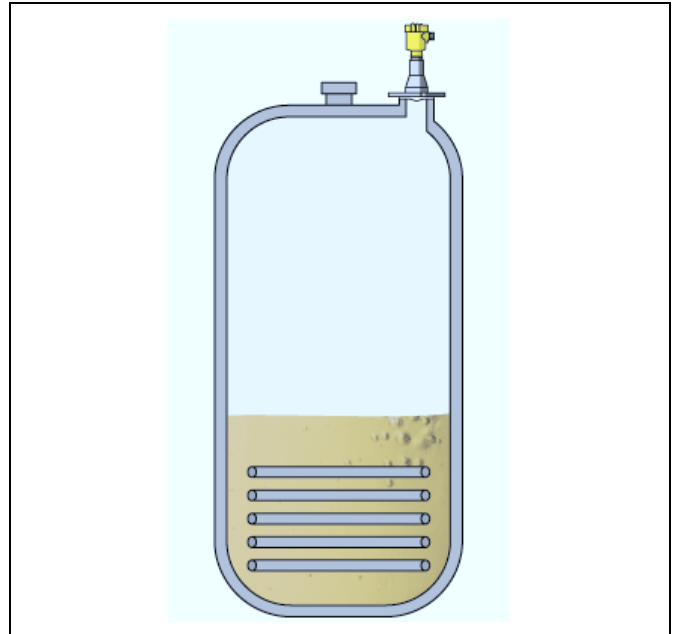


Fig. 8: Level measurement in a sugar evaporator with VEGAPULS 63

The VEGAPULS 63 radar sensor is particularly suitable for level measurement in the sugar evaporator.

The PTFE encapsulated horn antenna is protected against contamination or adhesion by the juice. The instrument is gauge and low pressure resistant, even with dynamic pressure and suctions.

7 Electronics - 4 ... 20 mA/HART - two-wire

Configuration of the electronics

The pluggable electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, the terminals are located in the separate terminal compartment.

Voltage supply

Power supply and current signal are carried on the same two-wire cable. The operating voltage can differ depending on the instrument version.

You can find the data of the voltage supply in chapter "Technical data" in the operating instructions manual of the respective instrument.

Provide a reliable separation between the supply circuit and the mains circuits according to DIN EN 61140 VDE 0140-1.

Data of the voltage supply:

- Operating voltage
 - 9.6 ... 36 V DC
- Permissible residual ripple - Non-Ex, Ex-ia instrument
 - for $9.6 \text{ V} < U_N < 14 \text{ V}$: $\leq 0.7 \text{ V}_{\text{eff}}$ (16 ... 400 Hz)
 - for $18 \text{ V} < U_N < 36 \text{ V}$: $\leq 1.0 \text{ V}_{\text{eff}}$ (16 ... 400 Hz)

Keep in mind the following additional factors that influence the operating voltage:

- Lower output voltage of the power supply unit under nominal load (e.g. with a sensor current of 20.5 mA or 22 mA in case of fault)
- Influence of additional instruments in the circuit (see load values in chapter "Technical data" of the operating instructions of the respective instrument)

Connection cable

The instrument is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, screened cable should be used.

In the product configurator of VEGAPULS, different cable glands are available. This selection covers all cable diameters in the range of 4 ... 12 mm (0.16 ... 0.47 in).

We generally recommend the use of screened cable for HART multidrop mode.

Cable screening and grounding

If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

Connection

Single chamber housing

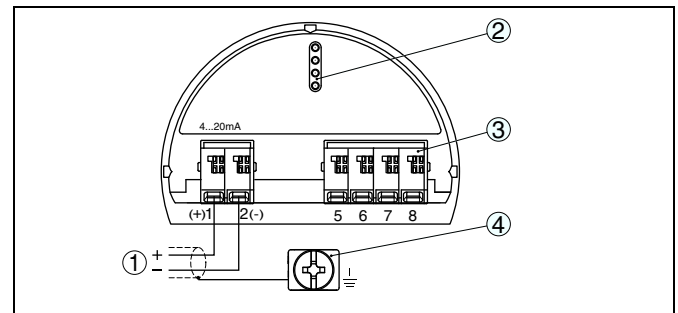


Fig. 9: Electronics and terminal compartment, single chamber housing

- 1 Voltage supply/Signal output
- 2 For display and adjustment module or interface adapter
- 3 For external display and adjustment unit
- 4 Ground terminal for connection of the cable screen

Double chamber housing

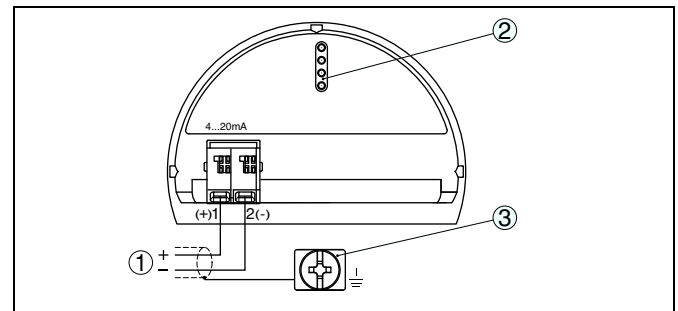


Fig. 10: Terminal compartment, double chamber housing

- 1 Voltage supply/Signal output
- 2 For display and adjustment module or interface adapter
- 3 Ground terminal for connection of the cable screen

Wire assignment connection cable VEGAPULS WL 61

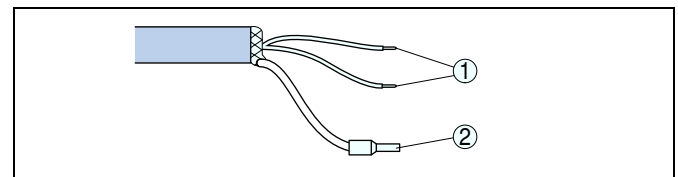


Fig. 11: Wire assignment in permanently connected connection cable

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

8 Electronics - 4 ... 20 mA/HART - four-wire

Configuration of the electronics

The pluggable electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. The terminals for the power supply are located in the separate connection compartment.

Voltage supply

If a reliable separation is required, the power supply and the current output are transmitted over separate two-wire connection cables.

- Operating voltage with version for low voltage
 - 9.6 ... 48 V DC, 20 ... 42 V AC, 50/60 Hz
- Operating voltage with version for mains voltage
 - 90 ... 253 V AC, 50/60 Hz

Connection cable

The 4 ... 20 mA current output is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

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

An outer cable diameter of 5 ... 9 mm ensures the seal effect of the respective cable entry.

Cable screening and grounding

If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

Connection, double chamber housing

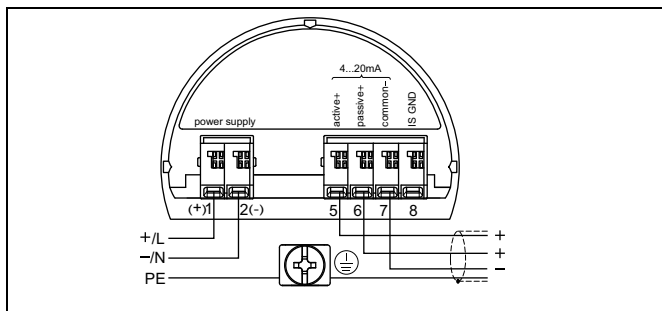


Fig. 12: Terminal compartment, double chamber housing

- 1 Voltage supply
- 2 4 ... 20 mA signal output active
- 3 4 ... 20 mA signal output passive

9 Electronics - Profibus PA

Configuration of the electronics

The pluggable electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the plug with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, these connection elements are located in the separate terminal compartment.

Voltage supply

The voltage supply is provided by a Profibus DP /PA segment coupler.

Data of the voltage supply:

- Operating voltage
 - 9 ... 32 V DC
- Max. number of sensors per DP/PA segment coupler
 - 32

Connection cable

Connection is carried out with screened cable according to Profibus specification.

In the product configurator of VEGAPULS, different cable glands are available. This selection covers all cable diameters in the range of 4 ... 12 mm (0.16 ... 0.47 in).

Make sure that the entire installation is carried out according to the Profibus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding

In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor must not be connected to ground potential or to another cable screen.

Connection

Single chamber housing

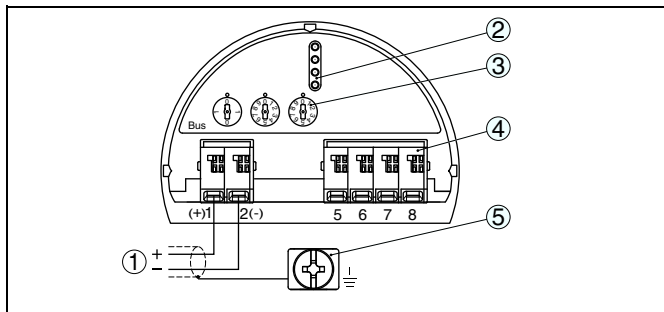


Fig. 13: Electronics and terminal compartment, single chamber housing

- 1 Voltage supply/Signal output
- 2 For display and adjustment module or interface adapter
- 3 Selection switch for bus address
- 4 For external display and adjustment unit
- 5 Ground terminal for connection of the cable screen

Double chamber housing

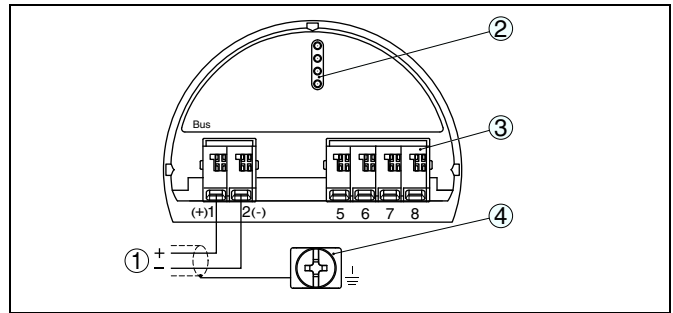


Fig. 14: Terminal compartment, double chamber housing

- 1 Voltage supply/Signal output
- 2 For display and adjustment module or interface adapter
- 3 Ground terminal for connection of the cable screen

Wire assignment connection cable VEGAPULS WL 61

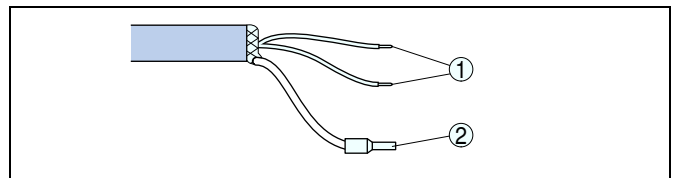


Fig. 15: Wire assignment in permanently connected connection cable

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

10 Electronics - Foundation Fieldbus

Configuration of the electronics

The pluggable electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, the terminals are located in the separate terminal compartment.

Voltage supply

Power supply via the H1 Fieldbus cable.

Data of the voltage supply:

- Operating voltage
 - 9 ... 32 V DC
- max. number of sensors
 - 32

Connection cable

Connection is carried out with screened cable according to Fieldbus specification.

In the product configurator of VEGAPULS, different cable glands are available. This selection covers all cable diameters in the range of 4 ... 12 mm (0.16 ... 0.47 in).

Make sure that the entire installation is carried out according to the Fieldbus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding

In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor must not be connected to ground potential or to another cable screen.

Connection

Single chamber housing

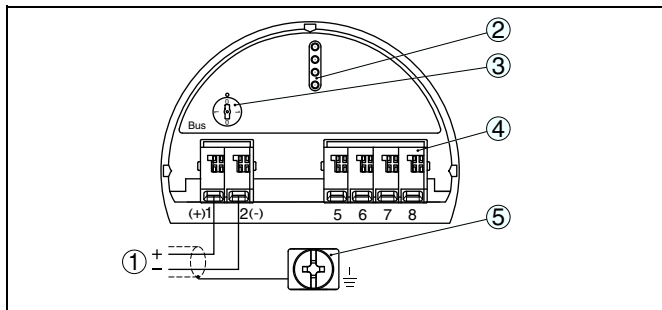


Fig. 16: Electronics and terminal compartment, single chamber housing

- 1 Voltage supply/Signal output
- 2 Contact pins for the display and adjustment module or interface adapter
- 3 Selection switch for bus address
- 4 For external display and adjustment unit
- 5 Ground terminal for connection of the cable screen

Double chamber housing

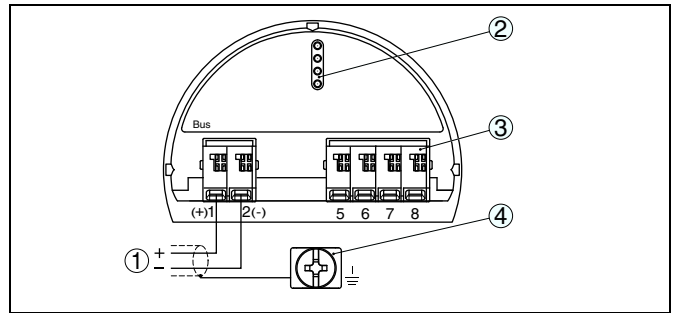


Fig. 17: Terminal compartment, double chamber housing

- 1 Voltage supply/Signal output
- 2 For display and adjustment module or interface adapter
- 3 Ground terminal for connection of the cable screen

Wire assignment connection cable VEGAPULS WL 61

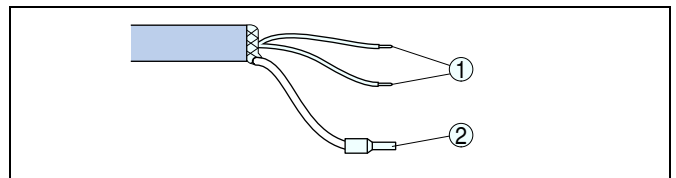


Fig. 18: Wire assignment in permanently connected connection cable

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

11 Electronics, Modbus, Levelmaster protocol

Configuration of the electronics

The pluggable electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. The terminals for the power supply are located in the separate connection compartment.

Voltage supply

Power supply via the Modbus host (RTU)

- Operating voltage
 - 8 ... 30 V DC
- max. number of sensors
 - 32

Connection cable

Connection is carried out with screened cable according to Fieldbus specification.

For power supply, a separate two-wire cable is required.

In the product configurator of VEGAPULS, different cable glands are available. This selection covers all cable diameters in the range of 4 ... 12 mm (0.16 ... 0.47 in).

Make sure that the entire installation is carried out according to the Fieldbus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding

In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor must not be connected to ground potential or to another cable screen.

Terminal compartment

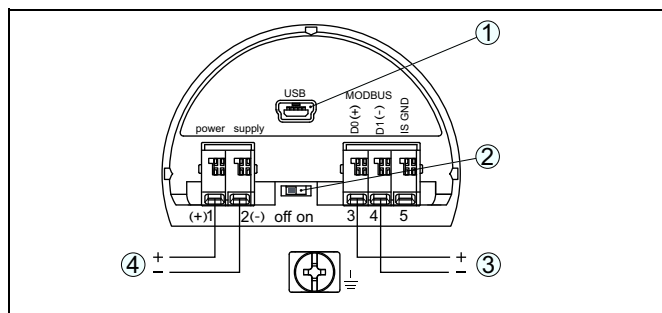


Fig. 19: Terminal compartment

- 1 USB interface
- 2 Slide switch for integrated termination resistor (120 Ω)
- 3 Voltage supply
- 4 Modbus signal

12 Operation

12.1 Overview

The sensors can be adjusted with the following adjustment media:

- With the display and adjustment module
- With external display and adjustment unit
- an adjustment software according to FDT/DTM standard, e.g. PACTware and PC

as well as via systems from other manufacturers, dependent on the signal output:

- 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 display and adjustment module or in the adjustment program.

12.2 Display and adjustment module PLICSCOM

The pluggable display and adjustment module is used for measured value indication, operation and diagnosis. It is equipped with an illuminated full dot matrix as well as four keys for adjustment.

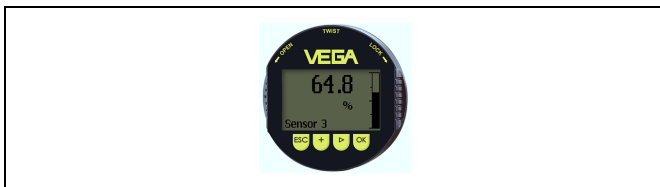


Fig. 20: Display and adjustment module PLICSCOM

The display and adjustment module is integrated in the respective sensor housing or in the external indicating and adjustment unit. After mounting, the sensor as well as the display and adjustment module are splash-proof even without housing cover.

12.3 External display and adjustment unit VEGADIS 62

VEGADIS 62 is suitable for measured value indication and adjustment of sensors with HART protocol. The instrument is looped into the 4 ... 20 mA/HART signal cable.



Fig. 21: External display and adjustment unit VEGADIS 62

12.4 PACTware/DTM

As an alternative to the display and adjustment module, the sensor can also be configured via a Windows PC. To do this, the configuration software PACTware and a suitable instrument driver (DTM) according to the FDT

standard are required. The current PACTware version as well as all available DTMs are compiled in a DTM Collection. The DTMs can also be integrated into other frame applications according to the FDT standard.

All device DTMs are available as a free-of-charge standard version and as a full version that must be purchased. In the standard version, all functions for complete setup are already included. An assistant for simple project configuration simplifies the adjustment considerably. Saving/printing the project as well as import/export functions are also part of the standard version.

In the full version there is also an extended print function for complete project documentation as well as a save function for measured value and echo curves. In addition, there is a tank calculation program as well as a multiviewer for display and analysis of the saved measured value and echo curves.

Connection of the PC via VEGACONNECT

The interface converter VEGACONNECT is required for connection of the PC. On the computer side, the connection is made via USB interface. The VEGACONNECT is placed instead of the display and adjustment module to the sensor, the connection to the sensor is made automatically. As an alternative the connection via the HART signal can be carried out on any position of the signal cable with 4 ... 20 mA/HART sensors.

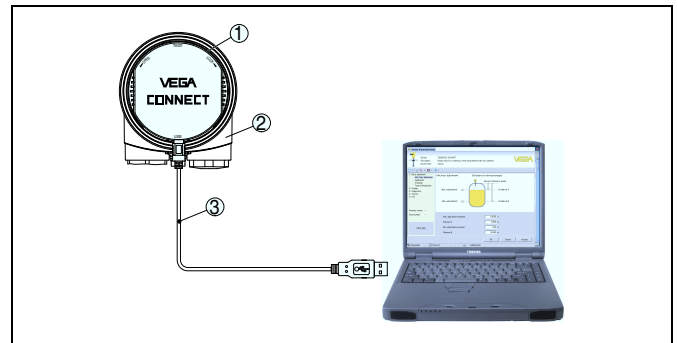


Fig. 22: Connection via VEGACONNECT and USB

- 1 VEGACONNECT
- 2 plics® sensor
- 3 USB cable to the PC

Necessary components:

- VEGAPULS
- PC with PACTware and suitable DTM
- VEGACONNECT
- Voltage supply/Processing system

12.5 Alternative adjustment programs

PDM

For HART and Profibus PA sensors, device descriptions are available as EDDs for the adjustment program PDM. The device descriptions are already included in the current version of the PDM. Newer instrument drivers that are not yet delivered with the PDM are available in the download section.

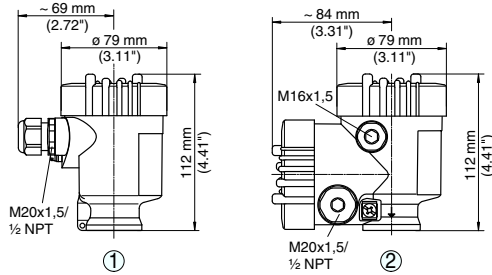
AMS

For HART and Foundation Fieldbus sensors, device descriptions are available as EDDs for the adjustment program AMS. The device descriptions are already included in the current version of the AMS. Newer instrument drivers that are not yet delivered with the AMS are available in the download section.

13 Dimensions

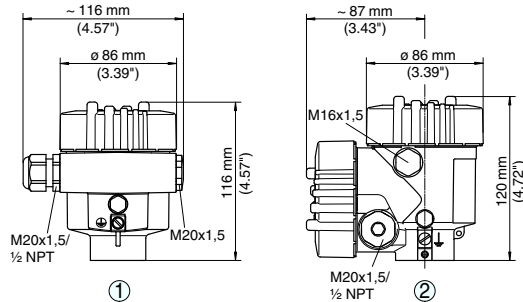
Plastic housing

VEGAPULS WL 61



- 1 Single chamber housing
2 Double chamber housing

Aluminium housing



- 1 Single chamber housing
2 Double chamber housing

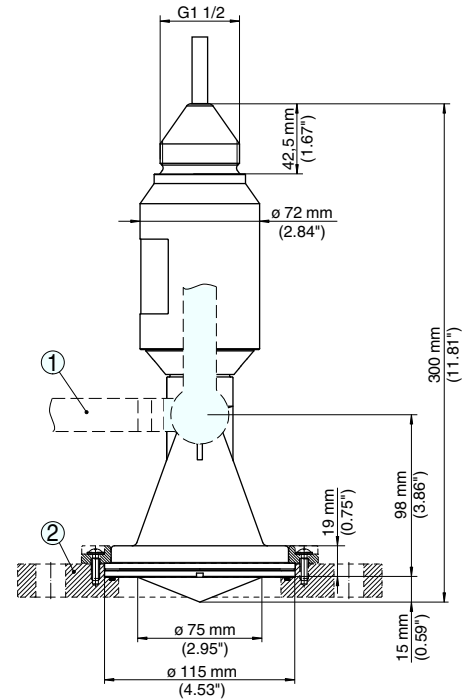
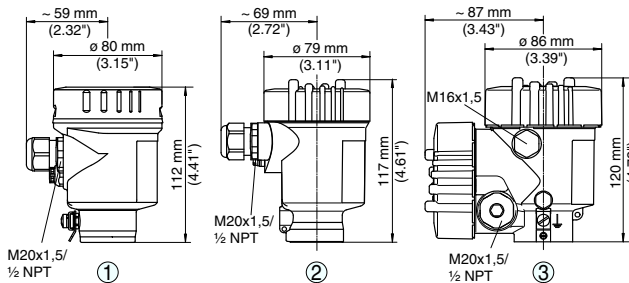


Fig. 23: Dimensions VEGAPULS

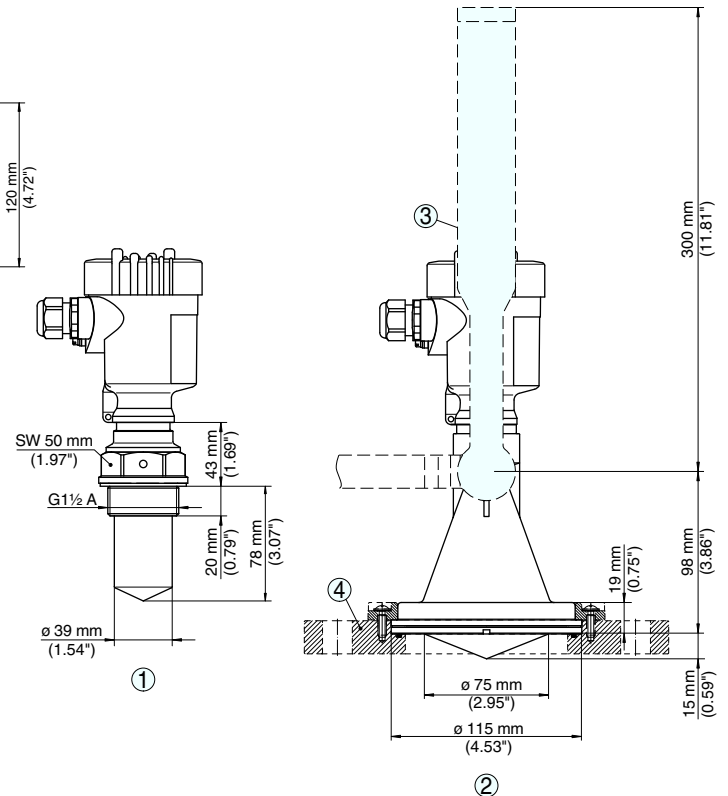
- 1 Mounting strap
2 Adapter flange

Stainless steel housing

VEGAPULS 61

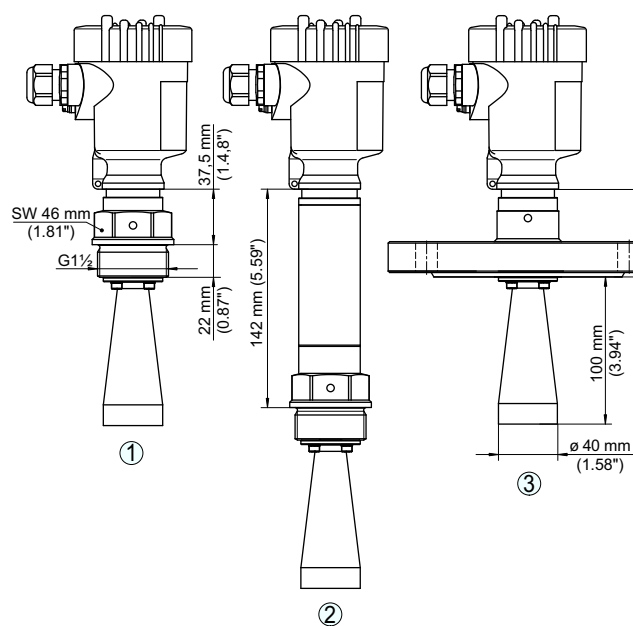


- 1 Single chamber housing, electropolished
2 Single chamber housing, precision casting
2 Double chamber housing, precision casting



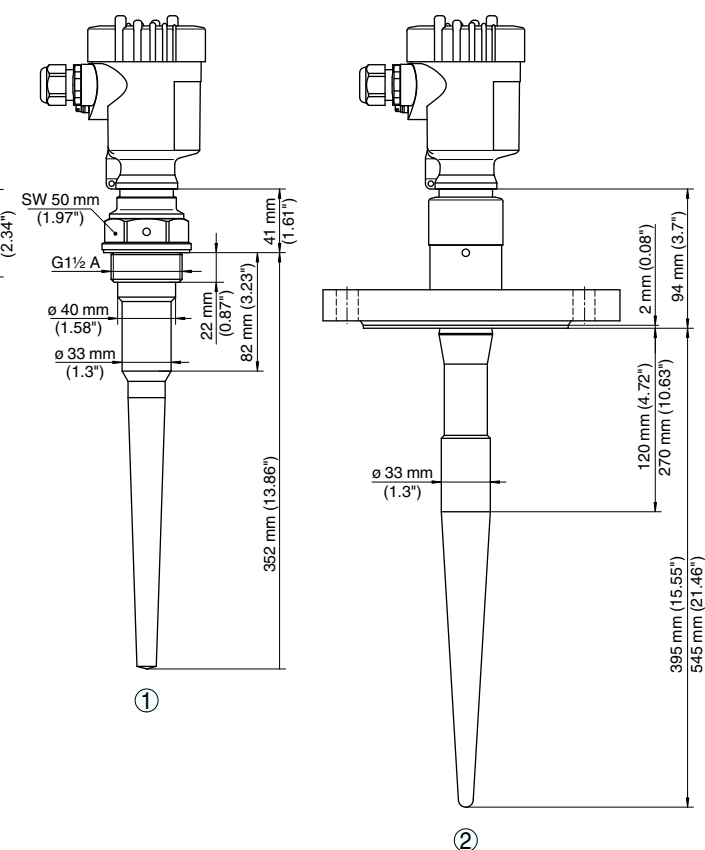
- 1 Version with encapsulated antenna system
2 Version with plastic horn antenna
3 Mounting strap
4 Adapter flange

VEGAPULS 62

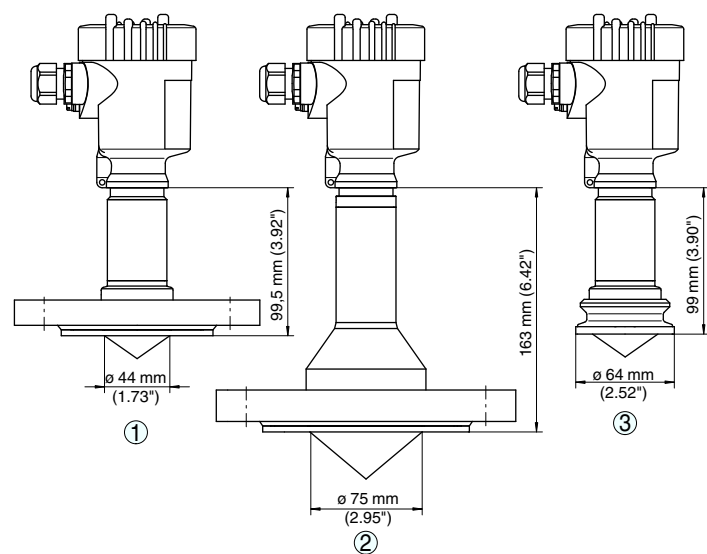


- 1 Threaded version
- 2 Threaded version with temperature adapter up to 250 °C
- 3 Flange version

VEGAPULS 65

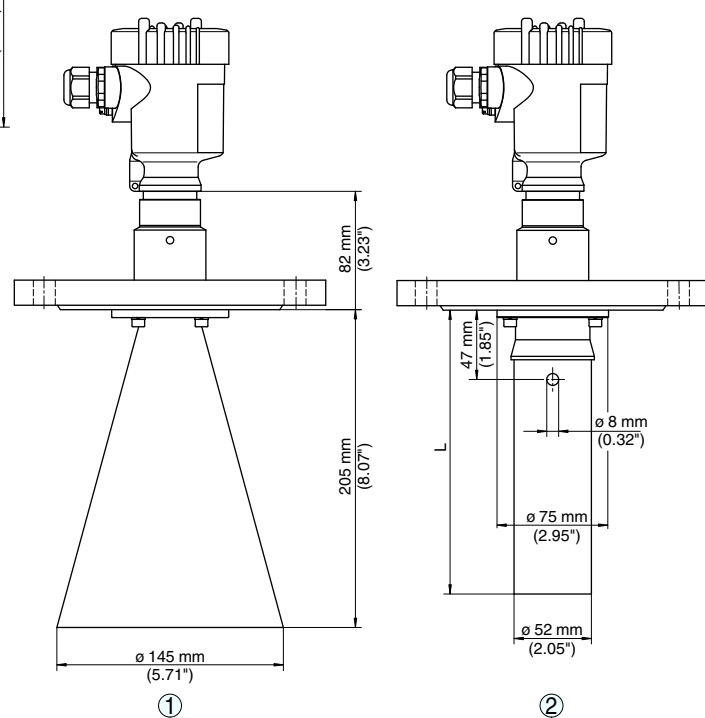


VEGAPULS 63



- 1 Flange version DN 50
- 2 Flange version DN 80
- 3 Tri-Clamp version 2"

VEGAPULS 66



- 1 Version with horn antenna ø 145 mm
- 2 Version with standpipe antenna

The listed drawings are only an excerpt of the available process fittings.
You can find more drawings at www.vega.com/downloads under "*Drawings*".



VEGA

VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany
Phone +49 7836 50-0
Fax +49 7836 50-201
E-Mail: info.de@vega.com
www.vega.com

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 - Software
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 - approvals
- and much, much more



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