



Product Information

**Hydrostatic
Suspension pressure transmitter
VEGABAR 66, 67**

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 » Approvals and which come 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

VEGABAR 66

The sensor element is the CERTEC® measuring cell with flush, abrasion resistant ceramic diaphragm. The hydrostatic pressure of the medium or the process pressure causes a capacitance change in the measuring cell via the diaphragm. This change is converted into an appropriate output signal.

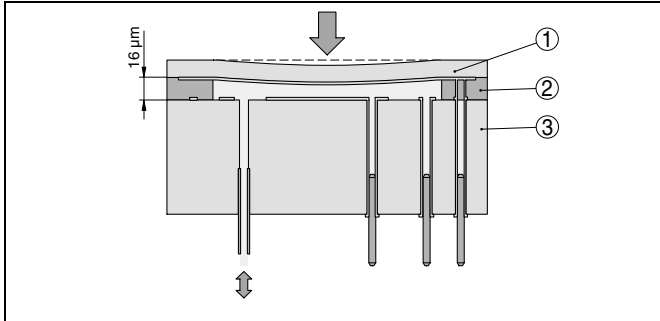


Fig. 1: Configuration of the CERTEC® measuring cell in VEGABAR 66

- 1 Diaphragm
- 2 Soldered glass bond
- 3 Base element

The CERTEC® measuring cell is also equipped with a temperature sensor. The temperature value can be displayed via the indicating and adjustment module or processed via the signal output.

VEGABAR 66 - climate compensated

The sensor element is an encapsulated CERTEC® absolute pressure measuring cell with front-flush, abrasion-resistant ceramic diaphragm. The hydrostatic pressure of the medium causes a capacitance change in the measuring cell via the ceramic diaphragm. This capacitance change is converted into an electrical signal, checked against an integrated reference pressure measurement and outputted as measured value via the output signal.

VEGABAR 67

The METEC® measuring cell is the measuring unit. It consists of the ceramic-capacitive CERTEC® measuring cell and a special, temperature-compensating isolating system.

The hydrostatic pressure of the product or the process pressure causes a capacitance change in the measuring cell via the metal process diaphragm and the isolating liquid. This change is converted into a corresponding output signal.

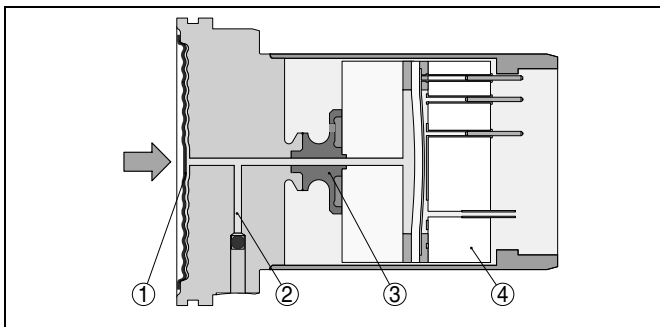


Fig. 2: Configuration of the METEC® measuring cell in VEGABAR 67

- 1 Process diaphragm
- 2 Isolating liquid
- 3 FeNi adapter
- 4 CERTEC® measuring cell

2 Type overview

VEGABAR 66



VEGABAR 67



Measuring cell	CERTEC®	METEC®
Diaphragm	Ceramic	Metal
Media	drinking water and waste water	also corrosive products, fuels
Process fitting	straining clamp, screwed fitting, thread, flange	Straining clamp, threaded fitting, thread, flange, hygienic fittings
Material Suspension cable/Connection tube	PE, PUR, FEP/316L	PE, PUR, FEP/316L
Material Transmitter	316L, PE-coating, PVDF	316L
Material diaphragm	Al ₂ O ₃ ceramic	Hastelloy C-276
Measuring cell seal	FKM, EPDM, FFKM	-
Isolating liquid	-	Med. white oil
Measuring range	-1 ... +25 bar/-100 ... +2500 kPa (-14.5 ... +362.6 psig)	-1 ... +25 bar/-100 ... +2500 kPa (-14.5 ... +362.6 psig)
Smallest measuring range	0.1 bar/10 kPa (1.45 psig)	0.1 bar/10 kPa (1.45 psig)
Process temperature	-40 ... +100 °C (-40 ... +212 °F)	-12 ... +100 °C (+10.4 ... +212 °F)
Deviation	< 0.1 %	< 0.1 %
Signal output	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Profibus PA • Foundation Fieldbus 	<ul style="list-style-type: none"> • 4 ... 20 mA/HART • Profibus PA • Foundation Fieldbus
Indication/Adjustment	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 61 • VEGADIS 62 	<ul style="list-style-type: none"> • PLICSCOM • PACTware • VEGADIS 61 • VEGADIS 62
Approvals	<ul style="list-style-type: none"> • Shipbuilding • ATEX • IEC • Overfill protection • FM • CSA • GOST 	<ul style="list-style-type: none"> • Shipbuilding • ATEX • IEC • Overfill protection • FM • CSA • GOST

3 Device selection

Application areas

VEGABAR 66

VEGABAR 66 is a suspension pressure transmitter for level measurement in wells, basins and atmospherically open vessels.

For use in atmospherically closed vessels under vacuum, VEGABAR 66 is available with absolute pressure measuring ranges.

VEGABAR 67

VEGABAR 67 is a suspension pressure transmitter for level measurement in vessels. Measured products can be all media against which the wetted materials of VEGABAR 67 are resistant.

For use in atmospherically closed vessels under vacuum, VEGABAR 67 is available with absolute pressure measuring ranges.¹⁾

Configuration and housing protection classes

VEGABAR 66 and 67 pressure transmitters are available in different versions:

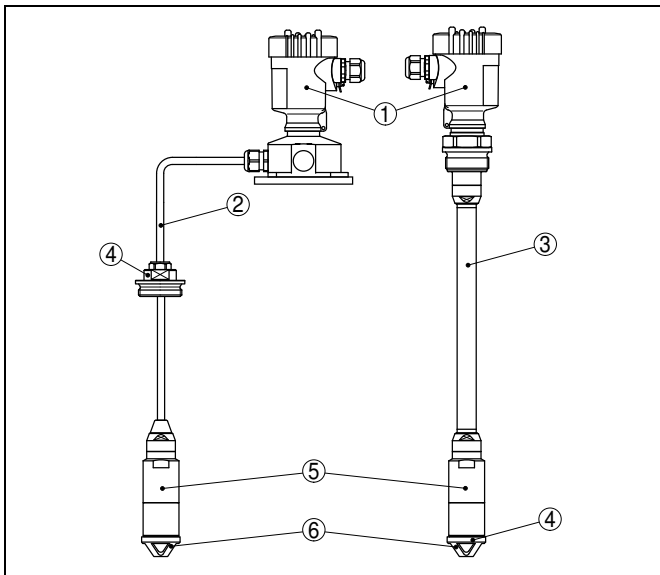




Fig. 3: Examples of a VEGABAR 66 with suspension cable (left), threaded fitting and remote electronics as well as extension tube and housing and thread (right)



- 1 Housing with integrated electronics
- 2 Suspension cable
- 3 Connection tube
- 4 Screw connection
- 5 Transmitter
- 6 Protective cap




4 Selection criteria



		VEGABAR 66	VEGABAR 67
Front-flush version		●	●
Dry measuring system		●	–
Oil filled measuring system		–	●
Abrasive wear		●	–
Aggressive products		–	●
Hygienic process fittings		–	●
Suitability for industry-specific applications	Shipbuilding	●	–
	Environment and recycling industry	–	–
	Water and waste water industry	–	–

5 Housing overview

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 wear	Industrial environment with increased mechanical wear

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, strong mechanical wear	Aggressive environment, strong mechanical wear

Separate version		
Material	Stainless steel 316L	plastic PBT
Protection rating	IP 68 (25 bar)	IP 65
Function	Transmitter	External electronics
Application area	Extremely moist environment	Industrial environment

6 Mounting

Mounting position

Suspension cable

The suspension cable versions must be mounted in a calm area or in a suitable protective tube. This avoids lateral movements of the transmitter and the resulting distortion of measurement data.

The suspension cable contains, apart from the connection cables and the suspension wire, also the capillaries for atmospheric pressure compensation.

Mounting examples

Ballast water

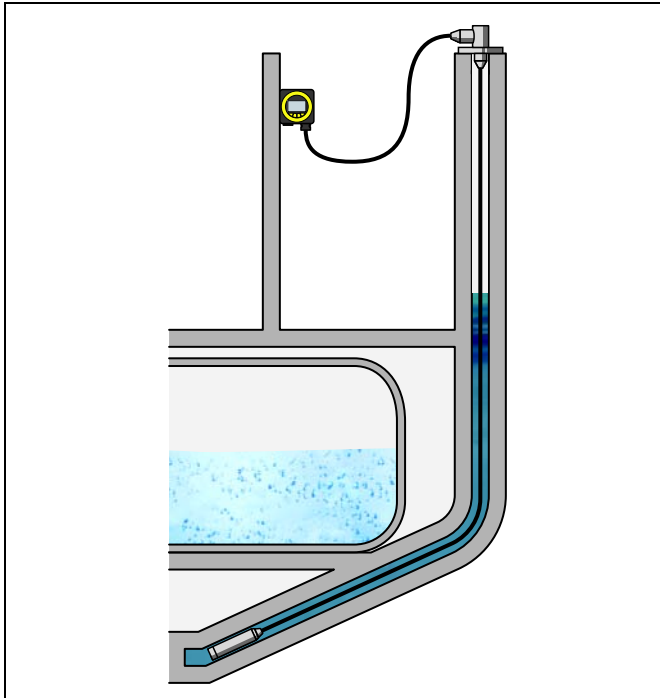


Fig. 4: Level measurement in ballast water tanks with VEGABAR 66

The ballast water measurements in the wing and double bottom tanks go directly into the stability calculations. Since the measuring sites during operation on board are virtually inaccessible, reliability and stability are an absolute must. Pressure shocks, abrasive sand particles and brackish water place additional heavy demands on the instrumentation.

With its external electronics, sensor housing in IP 69K and ceramic measuring cell, VEGABAR 66 is the perfect sensor for rough conditions.

Receiver

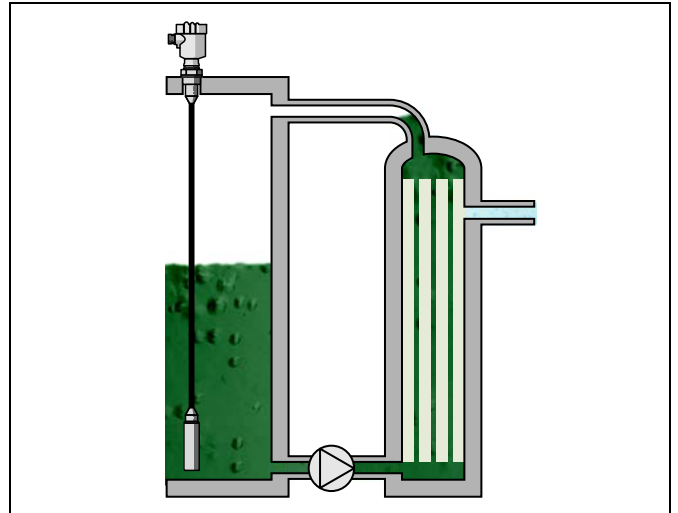


Fig. 5: Level measurement in a receiver with VEGABAR 67

Water from parts cleaning and degreasing plants are often polluted with oil. With modern microfiltration technology, oil can be separated from water. For automatic operation of microfiltration plants, also level measurements are required in the appropriate collection containers.

The level in the collection containers is measured by a VEGABAR 67 suspension pressure transmitter. Its advantages for this use are the front-flush, metallic measuring cell METEC[®], the suspension cable of highly chemically resistant FEP and the simple mounting from above.

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 plug with I²C interface for parameter adjustment are located on the upper side of the electronics. With the double chamber housing, these connection elements are located in the separate connection compartment.

Voltage supply

Depending on the version, the supply voltage and the current signal are carried on the same two-wire connection cable.

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.

- Operating voltage
 - 12 ... 36 V DC
- Permissible residual ripple
 - $U_{pp} < 1 \text{ V}$ (< 100 Hz)
 - $U_{pp} < 10 \text{ mV}$ (100 ... 10 kHz)

Connection cable

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.

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.

Cable screening 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).

Connection single chamber housing

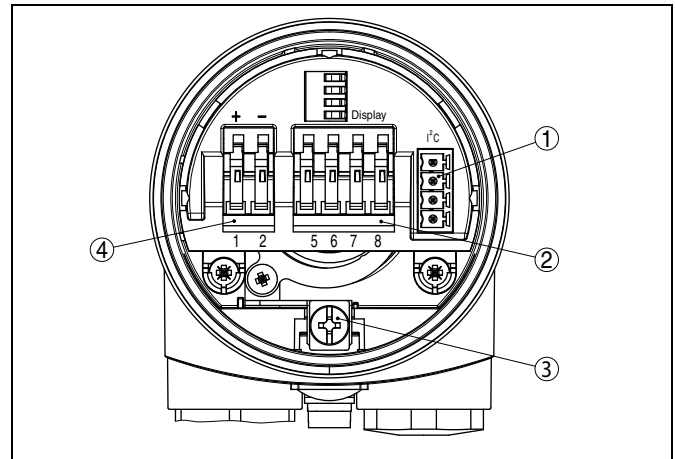


Fig. 6: Electronics and connection compartment with single chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Spring-loaded terminals for connection of the external indication VEGADIS 61
- 3 Ground terminal for connection of the cable screen
- 4 Spring-loaded terminals for voltage supply

Connection double chamber housing

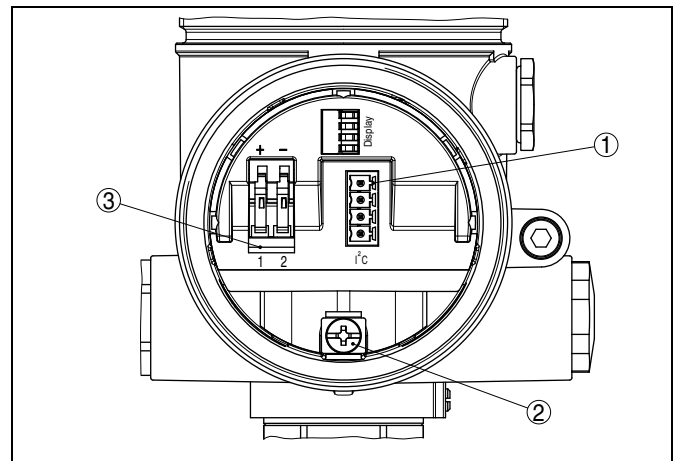


Fig. 7: Connection compartment, double chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Ground terminal for connection of the cable screen
- 3 Spring-loaded terminals for voltage supply

8 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. With the double chamber housing, these connection elements are located in the separate connection compartment.

Voltage supply

Power supply via the H1 Fieldbus cable.

- Operating voltage
 - 9 ... 32 V DC
- Max. number of sensors with DP/PA segment coupler
 - 32
- Max. number of sensors with VEGALOG 571 EP input card
 - 10

Connection cable

Connection is made with screened cable according to Profibus specification. A cable diameter of 5 ... 9 mm ensures the seal effect of the cable gland.

Make sure that the entire installation is carried out according to the Profibus specification. In particular, make sure that the termination of the bus is done with appropriate 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 at the power supply unit and at 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. The cable screens to the power supply unit and to the next distributor must be connected to each other and also connected to ground potential via a ceramic capacitor (e.g. 1 nF, 1500 V). The low frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

Connection single chamber housing

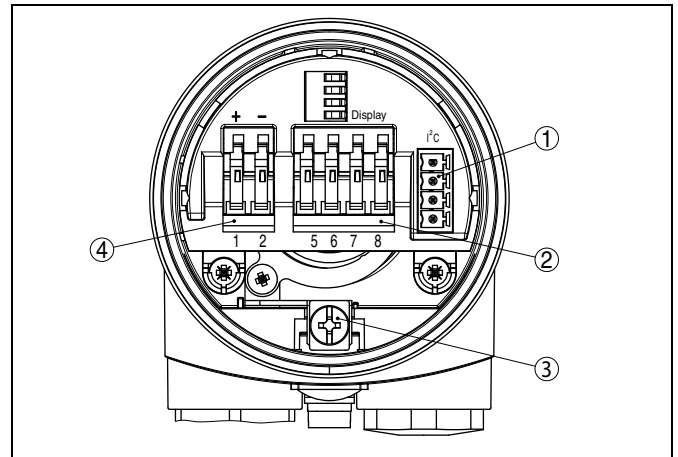


Fig. 8: Electronics and connection compartment with single chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Spring-loaded terminals for connection of the external indication VEGADIS 61
- 3 Ground terminal for connection of the cable screen
- 4 Spring-loaded terminals for voltage supply

Connection double chamber housing

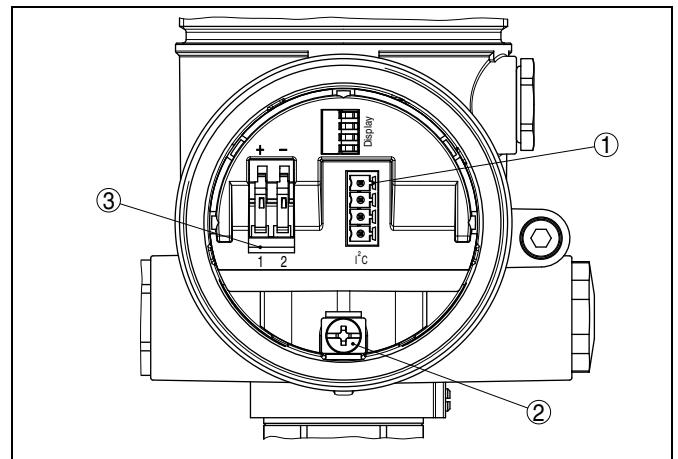


Fig. 9: Connection compartment, double chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Ground terminal for connection of the cable screen
- 3 Spring-loaded terminals for voltage supply

9 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 plug with I²C interface for parameter adjustment are located on the upper side of the electronics. With the double chamber housing, these connection elements are located in the separate connection compartment.

Voltage supply

Power supply via the H1 Fieldbus cable.

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

Connection cable

Connection is made with screened cable according to Fieldbus specification. A cable diameter of 5 ... 9 mm ensures the seal effect of the cable gland.

Make sure that the entire installation is carried out according to the Fieldbus specification. In particular, make sure that the termination of the bus is done with appropriate 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 at the power supply unit and at 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. The cable screens to the power supply unit and to the next distributor must be connected to each other and also connected to ground potential via a ceramic capacitor (e.g. 1 nF, 1500 V). The low frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

Connection single chamber housing

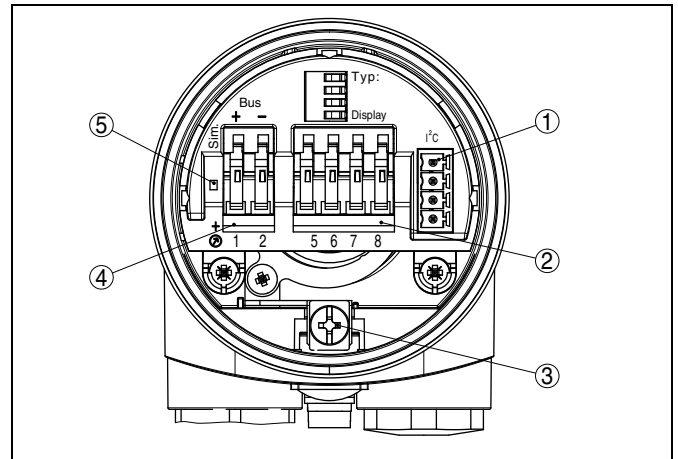


Fig. 10: Electronics and connection compartment with single chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Spring-loaded terminals for connection of the external indication VEGADIS 61
- 3 Ground terminal for connection of the cable screen
- 4 Spring-loaded terminals for Foundation Fieldbus connection
- 5 Simulation switch ("on" = mode for simulation release)

Connection double chamber housing

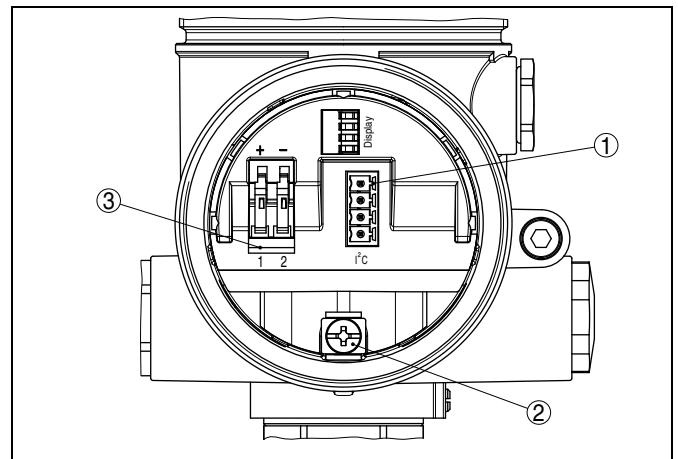


Fig. 11: Connection compartment, double chamber housing

- 1 Plug connector for VEGACONNECT (I²C interface)
- 2 Ground terminal for connection of the cable screen
- 3 Spring-loaded terminals for voltage supply

10 Operation

10.1 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.

10.2 Adjustment with the indicating and adjustment module PLICSCOM

The pluggable indicating and adjustment module is used for measured value indication, adjustment and diagnosis with level and pressure sensors. It is equipped with a display with full dot matrix as well as four keys for adjustment. An integrated background lighting can be adjusted via the adjustment menu.



Fig. 12: Indicating and adjustment module PLICSCOM

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

10.3 Adjustment with PACTware

PACTware/DTM

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

A VEGACONNECT interface adapter as well as an instrument driver for the respective sensor is necessary for adjustment with PACTware. All currently available VEGA DTMs are included as a DTM Collection with the current PACTware version on a CD. They can be purchased for a token fee from the responsible 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, including 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

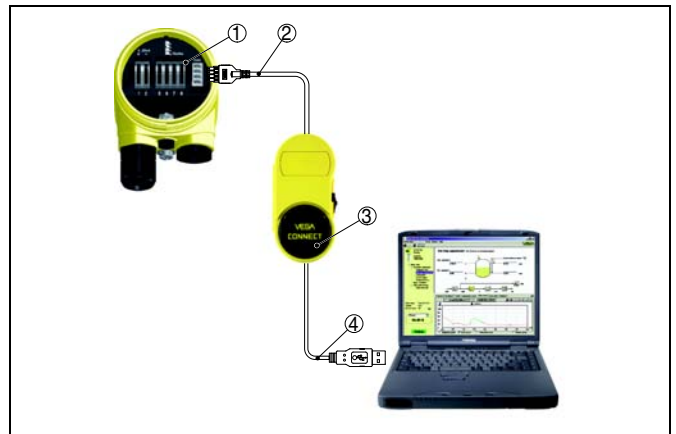


Fig. 13: Connection via I²C connection cable

- 1 I²C bus interface on the sensor
- 2 I²C cable of VEGACONNECT
- 3 VEGACONNECT
- 4 USB cable to the PC
- 5 PC

Necessary components:

- VEGABAR
- PC with PACTware and suitable VEGA DTM
- VEGACONNECT
- Power supply unit or processing system

10.4 Adjustment with other adjustment programs

PDM

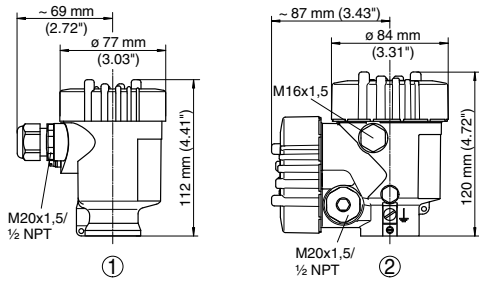
For VEGA Profibus PA sensors, instrument descriptions for the adjustment program PDM are available as EDD. The instrument descriptions are already implemented in the current version of PDM. For older versions of PDM, a free-of-charge download is available via Internet.

AMS

For VEGA Foundation Fieldbus 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.

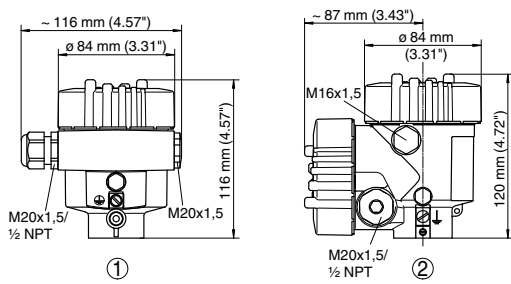
11 Dimensions

Plastic housing



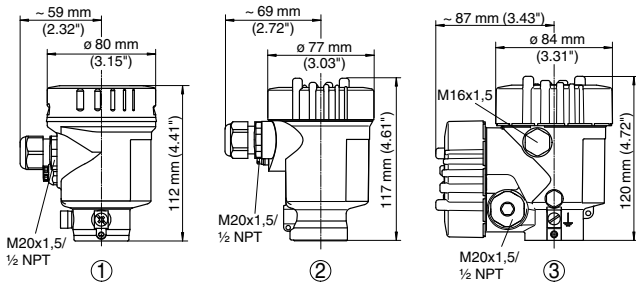
- 1 Single chamber housing
- 2 Double chamber housing

Aluminium housing



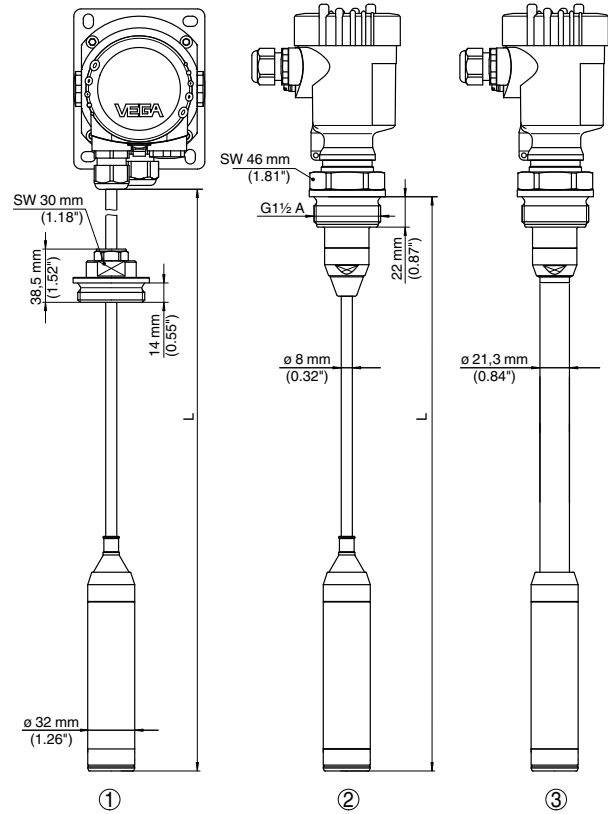
- 1 Single chamber housing
- 2 Double chamber housing

Stainless steel housing



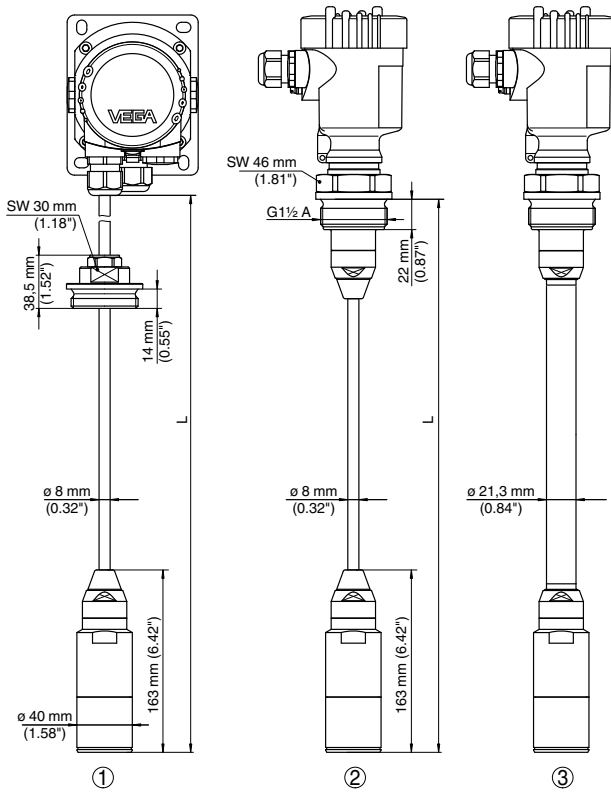
- 1 Single chamber housing electropolished
- 2 Single chamber housing precision casting
- 2 Double chamber housing precision casting

VEGABAR 66



- 1 Version with threaded fitting, unassembled G1½ A
- 2 Threaded version G1½ A, suspension cable
- 3 Threaded version G1½ A, connection tube

VEGABAR 67



- 1 Version with threaded fitting, unassembled G1 1/2 A
- 2 Threaded version G1 1/2 A, suspension cable
- 3 Threaded version G1 1/2 A, connection tube

The listed drawings are only an excerpt of the available process fittings. You can find further drawings on our homepage www.vega.com » Downloads » Drawings.



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- operating instructions manuals
- specification sheet
- Software
- drawings
- certificates
- approvals

and much, much more



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