

Pressure measurement

Process pressure/Hydrostatic

**VEGABAR 61**  
**VEGABAR 63**  
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**VEGABAR 65**



**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](http://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

## Area of application

VEGABAR series 60 sensors are pressure transmitters with a characteristics deviation of 0.1 % or 0.075 % for process pressure and level measurement. They are suitable for all applications with gases, vapours and liquids in which medium-resistant sensors and high accuracy are required. An IP 68 version is available for extremely humid areas. The instruments are provided with options for comprehensive on-site (directly at the measurement loop) as well as remote adjustment and indication. The electronics modules are available with analogue and digital signal outputs 4 ... 20 mA, 4 ... 20 mA/HART, Profibus PA and Foundation Fieldbus. This enables the configuration of economical single measurements as well as connection to DCS and PLC systems.

Special features of **VEGABAR 61** are the isolating system, front-flush process as well as hygienic fittings. This instrument mainly covers applications in highly corrosive and hot products as well as high pressures.

**VEGABAR 63** has a metal measuring cell with different sensor elements. It offers a large selection of front-flush process fittings with thread or in hygienic version. The instrument is particularly suitable for viscous but also corrosive liquids, especially in the food processing industry, in power stations and in the chemical industry.

**VEGABAR 64** with the CERTEC® measuring cell is available with small process fittings from G $\frac{1}{2}$  A, front-flush process fittings as well as a wide variety of threaded and flange fittings. It is thus particularly suitable for applications in the paper, chemical and pharmaceutical industries as well as in water/sewage water applications.

**VEGABAR 65** with METEC® measuring cell offers a large number of hygienic fittings. It is thus particularly suitable for applications in the chemical, food processing and pharmaceutical industries.

## User advantages

- small deviation in characteristics < 0.1 %, < 0.075 %, optional < 0.05 %
- Up to 150-fold overload resistance
- Product temperature up to 200 °C
- Measuring ranges -1 ... 72 bar
- Completely flush process fittings
- Functional safety according to IEC 61508-4/61511 up to SIL3
- Exchangeable indicating and adjustment module
- Quick setup via easy menu guidance
- Comprehensive monitoring and diagnostics functions

## Measuring principle

The process pressure causes via the diaphragm a change of an electrical parameter of the measuring cell. This change is converted into an appropriate output signal. Since the instruments are all designed for specific application areas, different sensor elements i.e. measuring units are used for detecting the pressure.

### VEGABAR 61

The sensor element in VEGABAR 61 is the CERTEC® measuring cell with isolating system and metallic process diaphragm. A

strain gauge element is implemented for measuring ranges over 100 bar.

### VEGABAR 63

With VEGABAR 63, a measuring cell with a piezoresistive sensor element and internal transmission liquid is used for measuring ranges up to 16 bar.

For measuring ranges above 25 bar, a dry strain gauge (DMS) on the back side of the process diaphragm is implemented.

The process diaphragm consists of stainless steel.

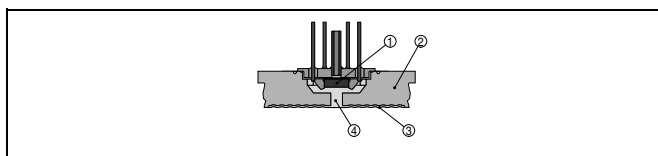


Fig. 1: Configuration of the piezoresistive measuring cell in VEGABAR 63

- 1 Sensor element
- 2 Base element
- 3 Diaphragm
- 4 Silicone oil filling

The features of the piezoresistive measuring cell are:

- Elastomere-free
- Wetted parts of stainless steel
- Low hysteresis

### VEGABAR 64

The sensor element of VEGABAR 64 is the dry ceramic-capacitive CERTEC® measuring cell. Base element and diaphragm consist of high purity sapphire-ceramic®.

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.

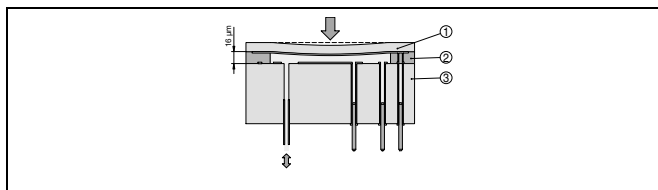


Fig. 2: Configuration of the CERTEC® measuring cell in VEGABAR 64

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

The features of the CERTEC® measuring cell are:

- Very high overload resistance
- Good corrosion resistance
- Very high abrasion resistance
- No hysteresis

### VEGABAR 65

The METEC® measuring cell is the measuring unit of VEGABAR 65. This unit consists of a CERTEC® measuring cell and a special

isolating system with metallic process diaphragm. A special feature of this isolating system is the direct mechanical compensation of temperature influence.

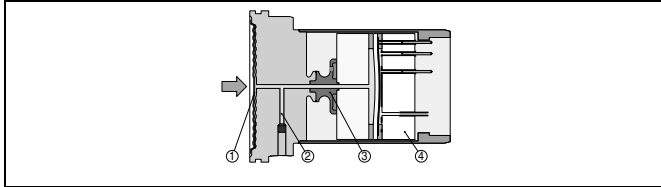


Fig. 3: Configuration of the METEC® measuring cell in VEGABAR 65

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

The features of the METEC® measuring cell are:

- Completely welded, elastomer-free
- Good thermo-shock reaction
- Excellent long-term stability
- High degree of flushness

**Configuration**

VEGABAR 61, 63, 64 and 65 pressure transmitters are available with different housing protection classes:

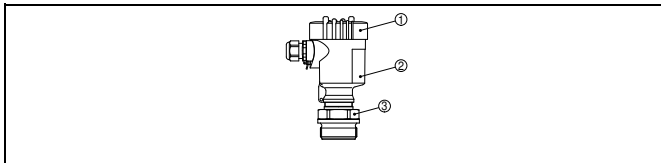


Fig. 4: Example of a VEGABAR 64 with connection G1 A and plastic housing in protection IP 66/IP 67

- 1 Housing cover with integrated PLICSCOM (optional)
- 2 Housing with electronics
- 3 Process fitting with measuring cell

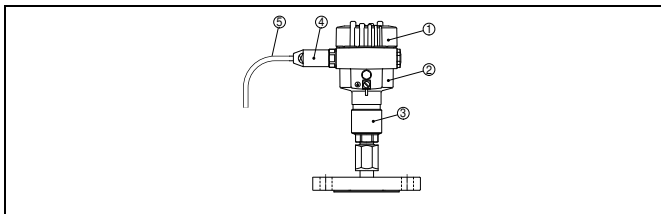


Fig. 5: Example of a VEGABAR 61 with flange and Aluminium housing in protection IP 66/IP 68, 1 bar

- 1 Housing cover with integrated PLICSCOM (optional)
- 2 Housing with electronics
- 3 Process fitting with measuring cell
- 4 Cable gland
- 5 Connection cable

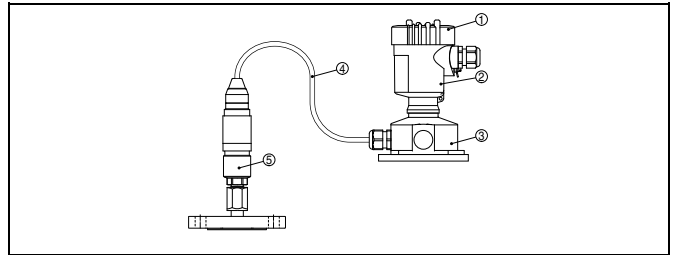


Fig. 6: Example of a VEGABAR 61 with flange and stainless steel housing in protection IP 68 and remote electronics

- 1 Housing cover with integrated PLICSCOM (optional)
- 2 Housing with electronics
- 3 Housing socket
- 4 Connection cable
- 5 Process fitting with measuring cell

**1.1 Application examples**

**Reaction vessel**

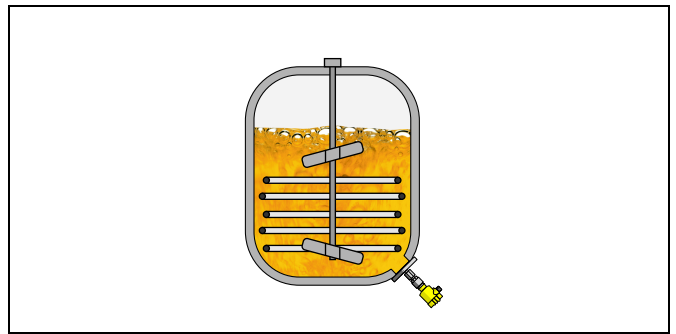


Fig. 7: Level measurement in the reaction vessel with VEGABAR 61

VEGABAR 61 can be also used in high temperatures. The instrument measures the hydrostatic pressure of the liquid column independent of foam on the product surface. Its advantages are high resistance diaphragm materials and low oil volume of the isolating diaphragm. This keeps the temperature influence of the isolating diaphragm low.

**Chemical pump**

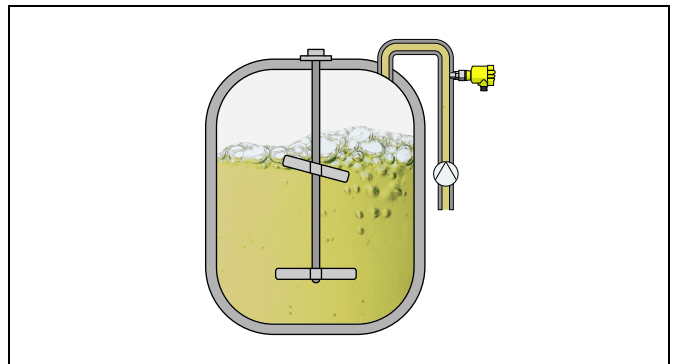


Fig. 8: Dry run protection on a chemical pump with VEGABAR 63

VEGABAR 63 pressure transmitter with piezoresistive measuring cell and metal diaphragm is used for dry run protection of chem-

ical pumps. Its strengths are the front-flush process fitting also for small tube diameters as well as the chemically resistant process diaphragm.

### Pressurised screen

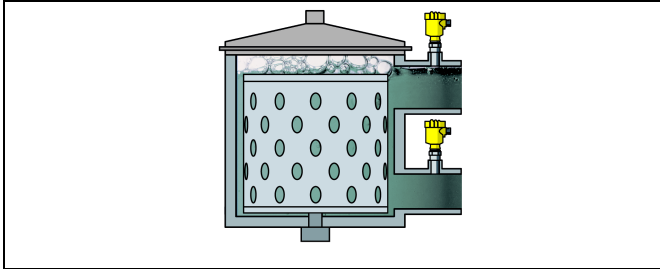


Fig. 9: Pressure measurement on a screen with VEGABAR 64

In the paper industry, screens are used for fibre separation. For effective screening, the machine must be run with the correct operating parameters. To accomplish this, the pressure is measured at the inlet and discharge areas. For this measurement the pressure transmitter VEGABAR 64 with the small ceramic CERTEC® measuring cell is deployed. It is front-flush and thus self-cleaning as well as highly resistant.

### Feeding vessels

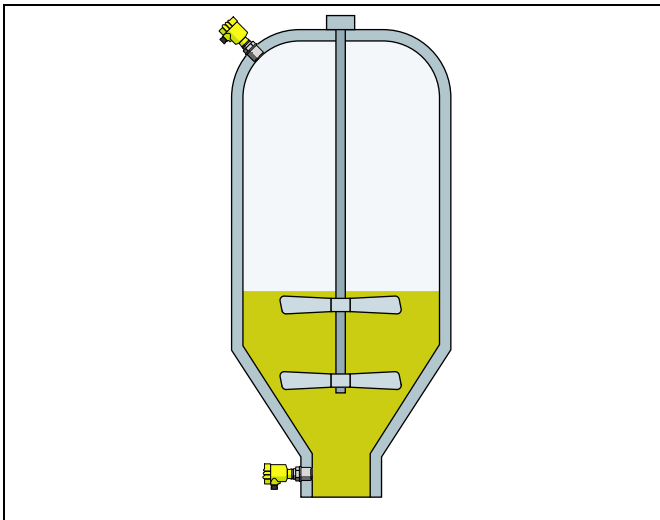


Fig. 10: Level and pressure measurement in a feeding vessel with VEGABAR 65

In the cosmetics industry, batch vessels are used for a wide variety of products. Frequent, powerful cleaning processes accompany every product and batch change. The total pressure as well as the overpressure are detected by two VEGABAR 65 pressure transmitters. VEGABAR 65 is especially characterised by its reliable thermo-shock reaction and vacuum resistance.

### Bitumen vessel

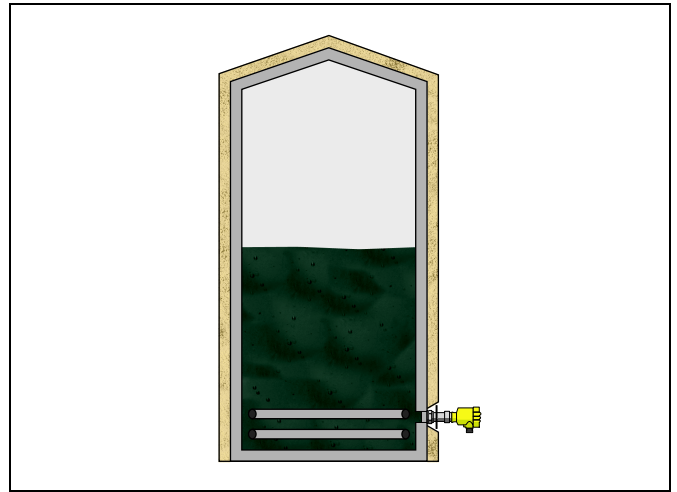


Fig. 11: Level measurement in a bitumen vessel with VEGABAR 65

VEGABAR 65 pressure transmitters are particularly suitable for hydrostatic level measurement of hot bitumen. The special configuration of its metal METEC® measuring cell ensures temperature decoupling between process fitting and electronics and thus enables application up to 200 °C (392 °F).



#### Information:

Continuative documentation such as operating instructions manuals and Safety Manual (SIL):

- 27519 - VEGABAR 61
- 32462 - VEGABAR 63
- 27525 - VEGABAR 64
- 27531 - VEGABAR 65
- 31637 - Safety Manual VEGABAR 50/60-4...20 mA/HART

## 2 Type overview

**VEGABAR 61**



**VEGABAR 63**



**VEGABAR 64**



Measuring cell:	small CERTEC®	Piezoresistive/DMS	CERTEC®
Diaphragm:	Ceramic	Metal	Ceramic
Media:	gases, vapours and liquids, also with abrasive substances	Gas, vapours and liquids, also viscous	gases, vapours and liquids, also with abrasive substances
Process fitting:	Threads from ½", flanges from DN 25, fittings for the paper industry thread 1" suitable for PASVE, thread M30 x 1.5; PMC from 1"	Manometer connection G½ A or ½ NPT, connection G1 A or G½ A flush, hygienic fitting	Thread from 1", flanges from DN 25, fittings for the food processing and paper industry
Material process fitting:	316L	316Ti	316L, PVDF, PVDF plated, Hastelloy C4 plated
Material diaphragm:	316L, Hastelloy C276, Hastelloy C2, Tantalum, Titanium, PTFE on 316Ti, gold-coating on 316L	316Ti, Elgiloy 2.4711	Ceramic
Measuring range:	-1 ... 72 bar (-14.5 ... 1044 psi)	-1 ... 600 bar (-14.5 ... 8702 psi)	-1 ... 72 bar (-14.5 ... 1044 psi)
Smallest measuring range:	0.4 bar (5.802 psi)	0.4 bar (5.802 psi)	0.1 bar (1.45 psi)
Process temperature:	-40 ... +120 °C (-40 ... +248 °F)	-40 ... +120 °C (-40 ... +248 °F)	-40 ... +150 °C (-40 ... +302 °F)
Deviation in characteristics:	< 0.1 %	< 0.1 %	< 0.075 % or < 0.05 %
Signal output:	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Connection:	Housing with terminal	Housing with terminal	Housing with terminal
Adjustment/Indication:	PLICSCOM	PLICSCOM	PLICSCOM
Remote adjustment/ indication:	VEGADIS 61	VEGADIS 61	VEGADIS 61
Functional safety:	up to SIL3	--	up to SIL3

**VEGABAR 65**

Measuring cell:	METEC®
Diaphragm:	Metal
Media:	gases, vapours and liquids also with higher temperatures
Material process fitting:	Thread from 1½", flanges from DN 20, fittings for the food processing industry
Material diaphragm:	Hastelloy C276, gold-coated, gold/rhodium-coated
Material:	316L, Hastelloy C276
Measuring range:	-1 ... 25 bar (-14.5 ... 363 psi)
Smallest measuring range:	0,1 bar (1.45 psi)
Process temperature:	-12 ... +200 °C (-10 ... +392 °F)
Deviation in characteristics:	< 0.075 %
Signal output:	4 ... 20 mA/HART, Profibus PA, Foundation Fieldbus
Connection:	Housing with terminal
Adjustment/Indication:	PLICSCOM
Remote adjustment/indication:	VEGADIS 61
Functional safety:	up to SIL3

**Indicating and adjustment module**



PLICSCOM

**Housing**



Plastic



Stainless steel



Aluminium



Aluminium (double chamber)

**Electronics**



4 ... 20 mA/HART



Profibus PA



Foundation Field-bus

**Process fitting**



Thread



Flange



Sanitary

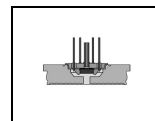
**Sensors**



CERTEC® measuring cell



METEC® measuring cell

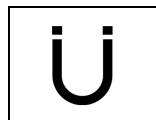


Piezoresistive measuring cell

**Approvals**



SIL



Overfill protection



Gas-explosion protection



Dust-explosion protection

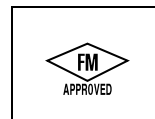


EHEDG

EHEDG



Ship



FM APPROVED

FM



CSA®

CSA



### 3 Mounting instructions

#### Installation position

VEGABAR functions in any installation position. Depending on the measuring system, the installation position can influence the measurement. This can be compensated by a position correction.

Select an installation position for plics<sup>®</sup> instruments that you can easily reach for mounting and connecting as well as later retrofitting of an indicating and adjustment module. The housing can be rotated by 330° without the use of any tools. You can also install the indicating and adjustment module in four different positions (each displaced by 90°).

## 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

#### Generally

Depending on the version, the supply voltage and current signal are carried on the same two-wire connection cable or over separate connection cables. The requirements on the voltage supply are specified in chapter "Technical data".

#### 4 ... 20 mA/HART two-wire

The VEGA power supply units VEGATRENN 149AEx, VEGAS-TAB 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.

#### Profibus PA

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

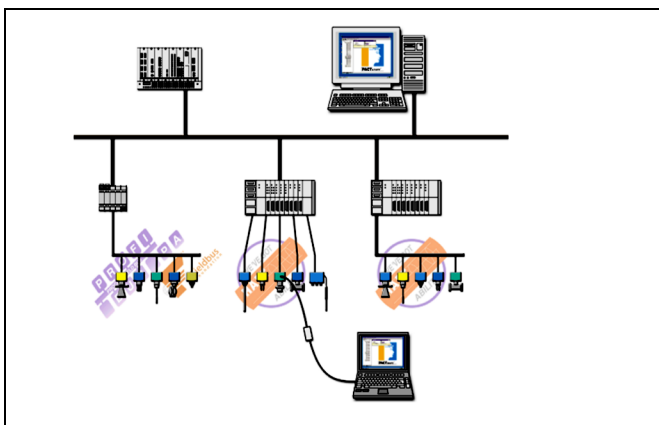


Fig. 12: Integration of instruments in a Profibus PA system via segment coupler DP/PA or data recording systems with Profibus PA input card

#### 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 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. VEGABAR 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.



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

### 4.4 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).

#### 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

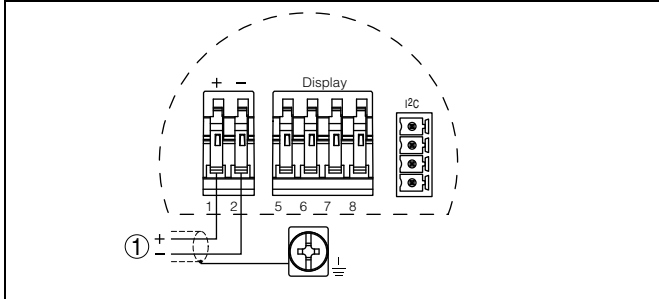


Fig. 13: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Voltage supply and signal output

### Double chamber housing - two-wire

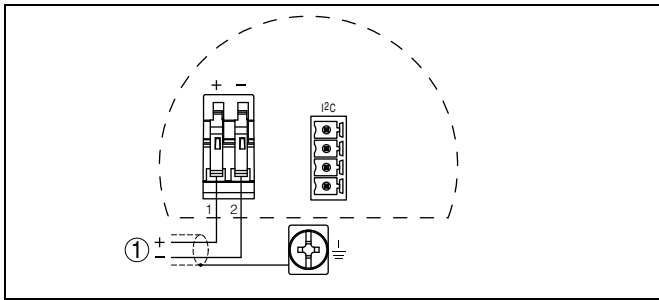


Fig. 14: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Voltage supply and signal output

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

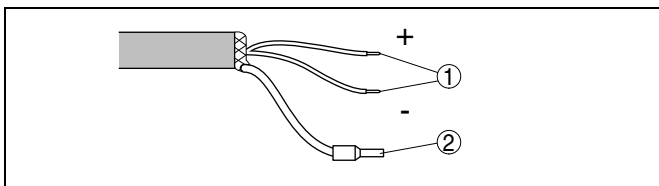


Fig. 15: Wire assignment, connection cable

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 Compatibility according to NAMUR NE 53

VEGABAR meet NAMUR recommendation NE 53. VEGA instruments are generally upward and downward compatible:

- Sensor software to DTM VEGABAR HART, PA or FF
- DTM VEGABAR for adjustment software PACTware™
- Indicating and adjustment module PLICSCOM for sensor software

The parameter adjustment of the basic sensor functions is independent of the software version. The range of available functions depends on the respective software version of the individual components.

### 5.3 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.<sup>1)</sup>

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

### PLICSCOM adjustment

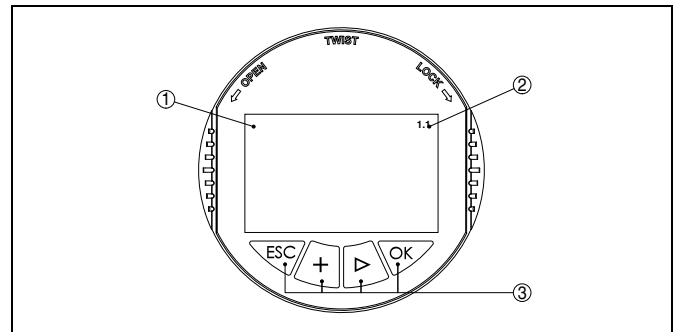


Fig. 16: Indicating and adjustment elements

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

### Key functions

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

### 5.4 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

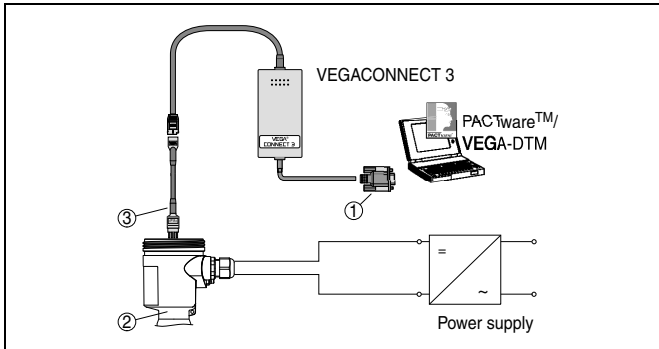


Fig. 17: Connection of the PC directly to the sensor via I<sup>2</sup>C interface

- 1 RS232 connection
- 2 VEGABAR
- 3 I<sup>2</sup>C adapter cable for VEGACONNECT 3

To adjust with PACTware™, a VEGACONNECT 3 with I<sup>2</sup>C 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

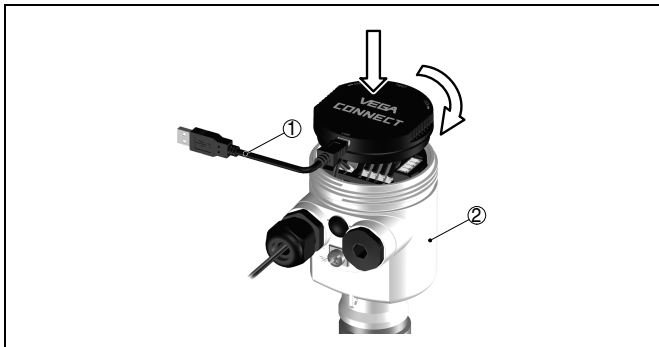


Fig. 18: Internal connection of the PC directly to the sensor via I<sup>2</sup>C interface

- 1 USB cable
- 2 Sensor

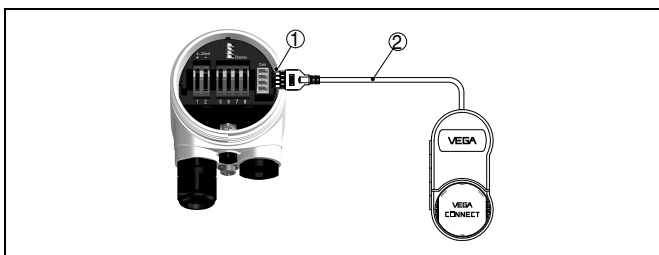


Fig. 19: External connection of the PC directly to the sensor via I<sup>2</sup>C interface

- 1 I<sup>2</sup>C bus (Com.) interface
- 2 I<sup>2</sup>C connection cable of VEGACONNECT 4

## 5.5 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

#### Common data

316L corresponds to 1.4404 or 1.4435

Materials, non-wetted parts

- Electronics housing
- Remote electronics housing
- Socket, wall mounting plate, remote electronics housing
- Seal between housing socket and wall mounting plate
- Seal, housing cover
- Inspection window in housing cover for indicating and adjustment module
- Ground terminal
- Connection cable between IP 68 transmitter and remote electronics housing
- Type plate support with IP 68 version on cable

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

316Ti/316L  
 PUR, FEP, PE

PE hard

#### VEGABAR 61

Materials, wetted parts

- Process fitting
- Diaphragm

Weight approx.

316L  
 316L, Hastelloy C276, Hastelloy C2, Tantalum, Titanium, PTFE on 316Ti  
 0.8 ... 8 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting

#### VEGABAR 63

Materials, non-wetted parts

- Internal transmission liquid

Materials, wetted parts

- Process fitting
- Diaphragm standard
- Diaphragm from measuring range 25 bar, with not flush version
- Seal, O-ring

Weight approx.

Synthetic oil, Halocarbon oil<sup>2)3)</sup>

316Ti

316Ti

Elgiloy 2.4711

FKM (Viton), EPDM, NBR

0.8 ... 8 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting

#### VEGABAR 64

Materials, wetted parts

- Process fitting
- Diaphragm
- Seal, measuring cell
- Seal, process fitting thread G1½ A

Weight approx.

316L, PVDF, PVDF plated, Hastelloy C4 plated  
 sapphire ceramic<sup>®</sup> (99.9 % oxide ceramic)  
 Viton, Kalrez 6375, EPDM, Chemraz 535  
 Klingersil C-4400

0.8 ... 8 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting

#### VEGABAR 65

Materials, non-wetted parts

Isolating liquid

Materials, wetted parts

- Process fitting
- Process diaphragm
- Process seal other hygienic fittings

- Process seal hygienic fitting with compression nut

- Seal, process fitting thread G1½ A

Weight approx.

Essomarcil (med. white oil, FDA-approved)

316L

Hastelloy C276, gold-coated, gold/rhodium-coated

EPDM: Version up to 140 °C (284 °F)

Viton: Version up to 180/200 °C (356/392 °F)

FEP-O-Seal

Klingersil C-4400

0.8 ... 8 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting

<sup>2)</sup> Synthetic oil: For measuring ranges up to 16 bar, FDA listed for the food processing industry. For measuring ranges up to 25 bar dry measuring cell.

<sup>3)</sup> Halocarbon oil: Generally in oxygen applications, not with vacuum measuring ranges, not with absolute measuring ranges < 1 bar<sub>abs</sub>.

**Output variable**

**4 ... 20 mA/HART**

Output signal	4 ... 20 mA/HART
Signal resolution	1.6 $\mu$ A
Failure signal	Current output unchanged 20.5 mA, 22 mA, < 3.6 mA (adjustable)
Max. output current	22 mA
Load	see load diagram under Power supply
Damping	0 ... 999 s, adjustable
Step response or adjustment time	150 ms (ti: 0 s, 0 ... 100 %)
Fulfilled NAMUR recommendations	NE 43

**Profibus PA**

Output signal	digital output signal, format according to IEEE-754
– Sensor address	126 (default setting)
Current value	constantly 10 mA, $\pm$ 1 mA
Integration time	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
– Channel 4	Temperature Value
Current value	10 mA, $\pm$ 0.5 mA

**Additional output variable, temperature (VEGABAR 64, 66)**

Processing is made via HART multidrop, Profibus PA and Foundation Fieldbus

Range	-50 ... +150 °C (-58 ... +302 °F)
Resolution	1 °C (1.8 °F)
Accuracy	
– in the range of 0 ... +100 °C (+32 ... +212 °F)	$\pm$ 3 K
– in the range of -50 ... 0 °C (-58 ... +32 °F) and +100 ... +150 °C (+212 ... +302 °F)	typ. $\pm$ 4 K

**Input variable**

Parameter	Process pressure
Measuring range	see product code
Recommended max. turn down	1 : 10 (no limitation)

**Reference conditions and actuating variables (similar to DIN EN 60770-1)**

Reference conditions according to DIN EN 61298-1	
– Temperature	+18 ... +30 °C (+64 ... +86 °F)
– Relative humidity	45 ... 75 %
– Air pressure	860 ... 1060 mbar/86 ... 106 kPa (12.5 ... 15.4 psi)
Determination of characteristics	limit point adjustment according to DIN 16086
Characteristics	linear
Calibration position	upright, diaphragm points downward
Influence of the installation position	
– VEGABAR 66	< 0.2 mbar/20 Pa (0.003 psi)
– VEGABAR 67	< 5 mbar/0.5 kPa (0.07 psi)

**Deviation determined according to the limit point method according to IEC 60770<sup>4)</sup>**

Applies to **digital** interfaces (HART, Profibus PA, Foundation Fieldbus) as well as for the **analogue** current output 4 ... 20 mA. Specifications refer to the set span. Turn down (TD) = nominal measuring range/set span.

**VEGABAR 61**

Deviation

- Turn down 1 : 1 up to 5 : 1 < 0.1 %
- Turn down > 5 : 1 < 0.02 % x TD

**VEGABAR 63**

Deviation

- Turn down 1 : 1 up to 5 : 1 < 0.1 %
- Turn down > 5 : 1 < 0.02 % x TD

**VEGABAR 64**

Deviation

- Turn down 1 : 1 up to 5 : 1 < 0.075 %
- Turn down > 5 : 1 < 0.015 % x TD

Deviation with absolutely flush process fittings EV, FT

- Turn down 1 : 1 up to 5 : 1 < 0.05 %
- Turn down > 5 : 1 < 0.01 % x TD

**VEGABAR 65**

Deviation

- Turn down 1 : 1 up to 5 : 1 < 0.075 %
- Turn down > 5 : 1 < 0.015 % x TD

**Influence of the product or ambient temperature**

Applies to **digital** interfaces (HART, Profibus PA, Foundation Fieldbus) as well as for the **analogue** current output 4 ... 20 mA. Specifications refer to the set span. Turn down (TD) = nominal measuring range/set span.

Thermal change zero signal, reference temperature 20 °C (68 °F):

- In the compensated temperature range 0 ... +100 °C (< 0.05 %/10 K  
(+32 ... 212 °F)
- Outside the compensated temperature range typ. < 0.1 %/10 K

Applies also to the **analogue** 4 ... 20 mA current output and refers to the set span.

Thermal change, current output &lt; 0.15 % at -40 ... +80 °C (-40 ... +176 °F)

**Long-term stability (similar to DIN 16086, DINV 19259-1 and IEC 60770-1)**

Applies to **digital** interfaces (HART, Profibus PA, Foundation Fieldbus) as well as for the **analogue** current output 4 ... 20 mA. Specifications refer to the set span. Turn down (TD) = nominal measuring range/set span.

Long-term drift of the zero signal &lt; (0.1 % x TD)/1 year

**Ambient conditions**

Ambient, storage and transport temperature

- without PLICSCOM -40 ... +80 °C (-40 ... +176 °F)
- with PLICSCOM -20 ... +70 °C (-4 ... +158 °F)
- IP 66/IP 68 and IP 68 version with PE connection cable -40 ... +60 °C (-40 ... +140 °F)

<sup>4)</sup> Incl. non-linearity, hysteresis and non-repeatability.



**Process conditions**

**VEGABAR 61**

Product temperature depending on the isolating liquid (temperature:  $p_{abs} > 1 \text{ bar}/14.5 \text{ psi}/p_{abs} < 1 \text{ bar}/14.5 \text{ psi}$ )<sup>5)</sup>

- silicone oil KN2.2 -40 ... +150 °C/-40 ... +150 °C (-40 ... +302 °F/-40 ... +302 °F)
- Silicone oil KN2.2 and cooling element or capillaries -40 ... +200 °C/-40 ... +150 °C (-40 ... +392 °F/-40 ... +302 °F)
- Vegetable oil -10 ... +130 °C/-10 ... +130 °C (14 ... +266 °F/14 ... +266 °F)
- Water and glycerine -10 ... +120 °C (+14 ... +248 °F)
- High temperature oil KN3.2 and cooling element -10 ... +200 °C/-10 ... +200 °C (+14 ... +392 °F/+14 ... +392 °F)
- High temperature oil KN3.2 and cooling element 300 mm or capillaries -10 ... +400 °C/-10 ... +200 °C (+14 ... +752 °F/+14 ... +392 °F)
- Halocarbon oil KN21 -40 ... +150 °C/-40 ... +80 °C (-40 ... +302 °F/-40 ... +176 °F)
- Halocarbon oil KN21 for oxygen applications -40 ... +60 °C/-40 ... +60 °C (-40 ... +140 °F/-40 ... +140 °F)
- Silicone-free liquid KN70 -40 ... +70 °C (-40 ... +158 °F), no vacuum
- med. white oil KN62 and cooling element -12 ... +150 °C/-12 ... +150 °C (+10 ... +302 °F/+10 ... +302 °F)
- Med. white oil KN62 (FDA) and cooling element -12 ... +200 °C/-12 ... +150 °C (+10 ... +392 °F/+10 ... +302 °F)
- Med. white oil KN62 (FDA) and temperature adapter 300 mm -12 ... +250 °C/-12 ... +170 °C (+10 ... +482 °F/+10 ... +338 °F)

**VEGABAR 63**

Product temperature hygienic fitting G1 A flush according to EHEDG depending on the seal

- FKM (e.g. Viton) -20 ... +150 °C (-4 ... +302 °F)
- EPDM -40 ... +150 °C (-40 ... +302 °F)
- NBR -25 ... +150 °C (-13 ... +302 °F)

Product temperature threaded fittings G1 A, G½ A flush, cone, hygienic fitting LA/LB, bolting DN 32, flange with extension depending on seal<sup>6)</sup>

- Viton -20 ... +105 °C (-4 ... +221 °F)
- EPDM -40 ... +105 °C (-40 ... +221 °F)
- NBR -25 ... +105 °C (-13 ... +221 °F)

Product temperature threaded fitting G½ A, manometer<sup>7)</sup>

- 40 ... +105 °C (-40 ... +221 °F)

Product temperature fitting DRD, Tri-Clamp, flange, boltings according to DIN 11851 or DIN 11864, SMS, Tuchenhagen Vari-vent<sup>8)</sup>

**VEGABAR 64**

Product temperature standard version, depending on the meas. cell seal<sup>9)</sup>

- FKM (e.g. Viton) -20 ... +120 °C (-4 ... +248 °F)
- EPDM -40 ... +120 °C (-40 ... +248 °F), 1 h: 140 °C/284 °F cleaning temperature
- Kalrez 6375 (FFKM) -10 ... +120 °C (+14 ... +248 °F)
- Chemraz -30 ... +120 °C (-22 ... +248 °F)

Product temperature version with extended temperature range, depending on the meas. cell seal as well as order specification

- FKM (e.g. Viton) -20 ... +150 °C (-4 ... +302 °F)
- EPDM -40 ... +150 °C (-40 ... +302 °F)
- Kalrez 6375 (FFKM) -10 ... +150 °C (+14 ... +302 °F)
- Chemraz -30 ... +150 °C (-22 ... +302 °F)

**VEGABAR 65**

Product temperature, depending on the version

- Standard -12 ... +140 °C (+10 ... +284 °F)
- with extenation, extended thread or Clamp 2½" -12 ... +140 °C (+10 ... +284 °F)
- with cooling element -12 ... +180 °C (+10 ... +356 °F)
- with cooling element and screening sheet -12 ... +200 °C (+10 ... +392 °F)

**Common data**

Vibration resistance mechanical vibrations with 4 g and 5 ... 100 Hz<sup>10)</sup>

**VEGABAR 64, 65**

Shock resistance Acceleration 100 g<sup>11)</sup>

<sup>5)</sup> Version for oxygen applications up to 60 °C (140 °F).

<sup>6)</sup> Version for oxygen applications up to 60 °C (140 °F).

<sup>7)</sup> Version for oxygen applications up to 60 °C (140 °F).

<sup>8)</sup> Version for oxygen applications up to 60 °C (140 °F).

<sup>9)</sup> With process fitting PVDF, max. 100 °C (212 °F).

<sup>10)</sup> Tested according to the regulations of German Lloyd, GL directive 2.

<sup>11)</sup> Tested according to EN 60068-2-27.

**Electromechanical data - version IP 66/IP 67**

Cable entry/plug<sup>12)</sup>

– Single chamber housing

- 1 x cable gland M20 x 1.5 (cable: ø 5 ... 9 mm), 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; 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)

or:

- 1 x plug (depending on the version), 1 x blind stopper M20 x 1.5; plug M12 x 1 for VEGADIS 61 (optional)

Spring-loaded terminals

for wire cross-section up to 2.5 mm<sup>2</sup> (AWG 14)

**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**

**VEGABAR 61**

Supply voltage

– Non-Ex instrument

12 ... 36 V DC<sup>13)</sup>

– EEx-ia instrument

12 ... 30 V DC<sup>14)</sup>

– Exd instrument

18 ... 36 V DC<sup>15)</sup>

Permissible residual ripple

– <100 Hz

U<sub>ss</sub> <1 V

– 100 Hz ... 10 kHz

U<sub>ss</sub> <10 mV

<sup>12)</sup> Depending on the version M12 x 1, according to DIN 43650, Harting, Amphenol-Tuchel, 7/8" FF.

<sup>13)</sup> From measuring range 100 bar, 14 ... 36 V DC.

<sup>14)</sup> From measuring range 100 bar, 14 ... 30 V DC.

<sup>15)</sup> From measuring range 100 bar, 20 ... 36 V DC.

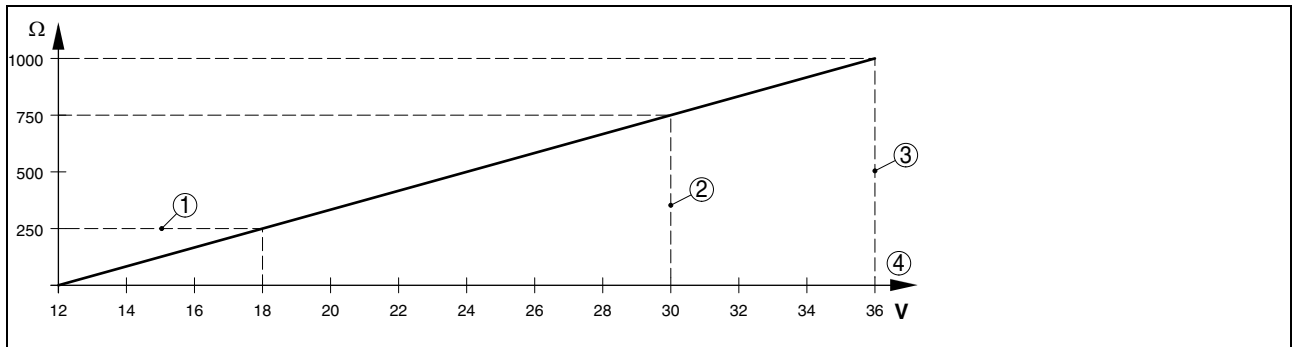


Fig. 20: Voltage diagram VEGABAR 61

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

**VEGABAR 63**

Supply voltage

- Non-Ex instrument 14 ... 36 V DC
- EEx-ia instrument 14 ... 30 V DC
- Exd 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

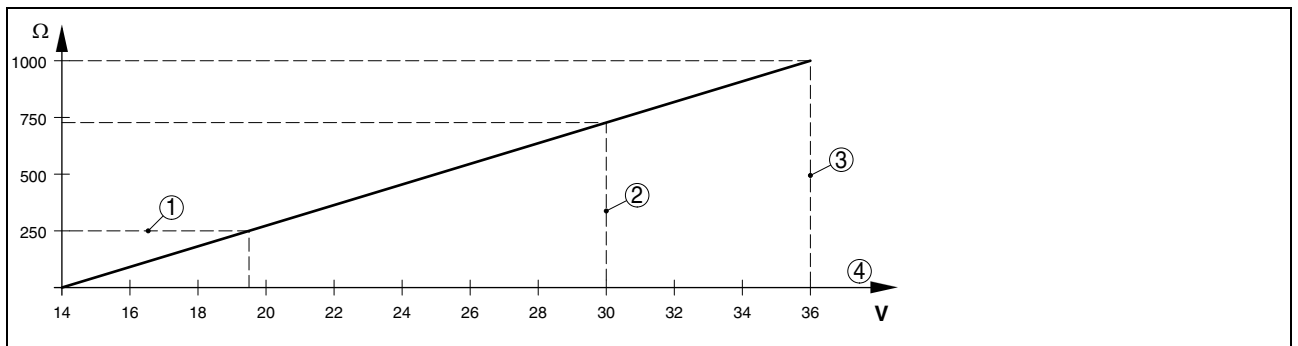


Fig. 21: Voltage diagram VEGABAR 63

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

**VEGABAR 64, 65**

Supply voltage

- Non-Ex instrument 12 ... 36 V DC
- EEx-ia instrument 12 ... 30 V DC
- Exd instrument 18 ... 36 V DC

Permissible residual ripple

- <100 Hz  $U_{ss} < 1 V$
- 100 Hz ... 10 kHz  $U_{ss} < 10 mV$

Load see diagram

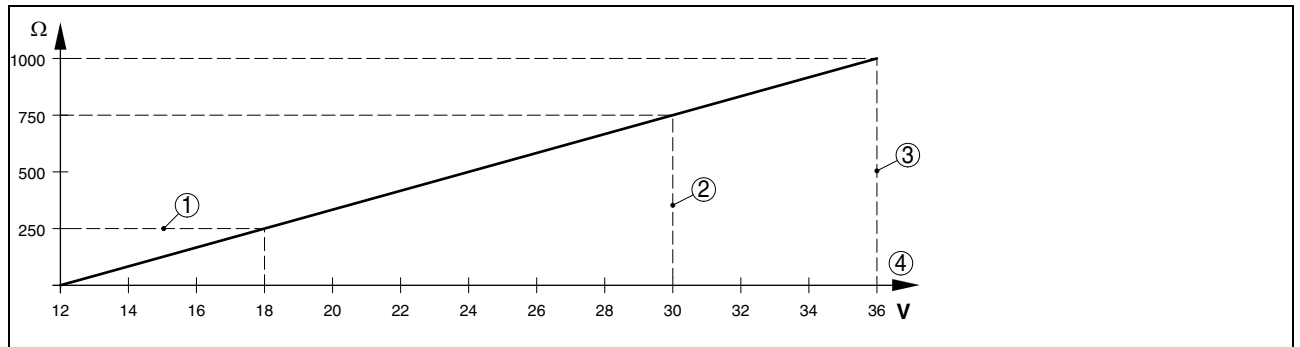


Fig. 22: Voltage diagram VEGABAR 64, 65

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

**Voltage supply - Profibus PA**

Supply voltage	
– Non-Ex instrument	9 ... 32 V DC
– EEx-ia instrument	9 ... 24 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
Power supply by/max. number of sensors	
– H1 Fieldbus cable/Voltage supply	max. 32 (max. 10 with Ex)

**Electrical protective measures**

Protection	
– Housing, standard	IP 66/IP 67 <sup>16)</sup>
– Aluminium and stainless housing (optionally available)	IP 66/IP 68 (1 bar) <sup>17)</sup>
– Transmitter in IP 68 version	IP 68
– Remote housing	IP 65
Overvoltage category	III
Protection class	II

**Existing approvals or approvals applied for<sup>18)19)</sup>**

ATEX ia	ATEX II 1G, 1/2G, 2G EEx ia IIC T6
ATEX ia, ATEX d	ATEX II 1/2G, 2G EEx d ia IIC T6
ATEX D	ATEX II 1/2D, 2D IP6X T, ATEX II 1/2-D IP6X T
ATEX na	ATEX 3G EEx na II T5 ... T1 X
FM NI	FM(NI) CL I, Div2, GP ABCD (DIP)CL II, III, DIV1, GP EFG
FM IS	FM(IS) CL I, II, III, DIV1, GP ABCDEFGF
FM	FM(XP-IS) CL I, II, III, DIV1, GP ABCDEFGFG
Ship approval	GL, LRS, ABS, CCS, RINA, DNV
Other approvals	WHG, VLAREM

<sup>16)</sup> Instruments with gauge pressure measuring ranges cannot detect the ambient pressure when submerged, e.g. in water. This can lead to falsification of the measured value.  
<sup>17)</sup> Only with instruments with absolute pressure ranges.  
<sup>18)</sup> Deviating data in Ex applications: see separate safety instructions.  
<sup>19)</sup> Depending on order specification.

**CE conformity**

EMC (89/336/EWG)

Emission EN 61326: 1997 (class B), susceptibility EN 61326: 1997/A1: 1998

LVD (73/23/EWG)

EN 61010-1: 2001

**Functional safety (SIL)**

You can find detailed information in the supplementary instructions manual "*Functional safety VEGABAR series 50 and 60*" or under [www.vega.com](http://www.vega.com).

Functional safety according to IEC 61508-4/61511

– Single channel architecture (1oo1D)

up to SIL2

– Double channel architecture (1oo2D)

up to SIL3

**Environmental instructions**

VEGA environment management system

certified according to DIN EN ISO 14001

You can find detailed information under [www.vega.com](http://www.vega.com).

## 7 Dimensions

### Housing in protection IP 66/IP 67

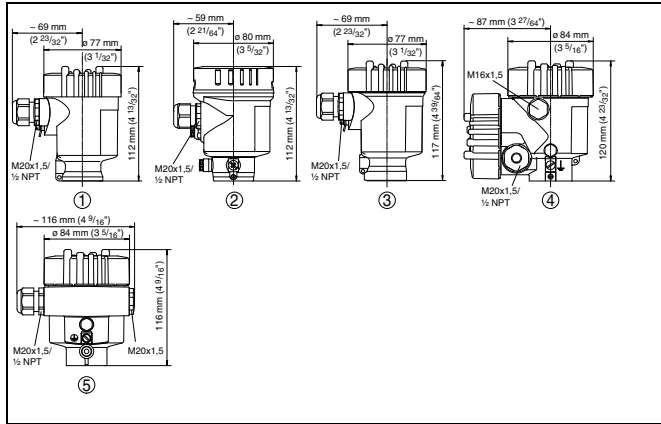


Fig. 23: Housing versions in protection IP 66/IP 67 (with integrated indicating and adjustment module the housing is 9 mm/0.35 in higher)

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

### Housing in protection IP 66/IP 68, 1 bar

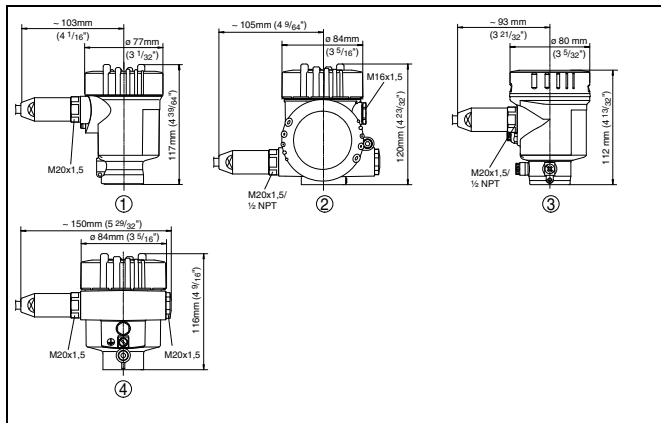


Fig. 24: Housing versions in protection IP 66/IP 68, 1 bar (with integrated indicating and adjustment module the housing is 9 mm/0.35 in higher)

- 1 Stainless steel housing
- 2 Special steel casting housing
- 3 Aluminium double chamber housing
- 4 Aluminium housing

### IP 68 version with remote housing

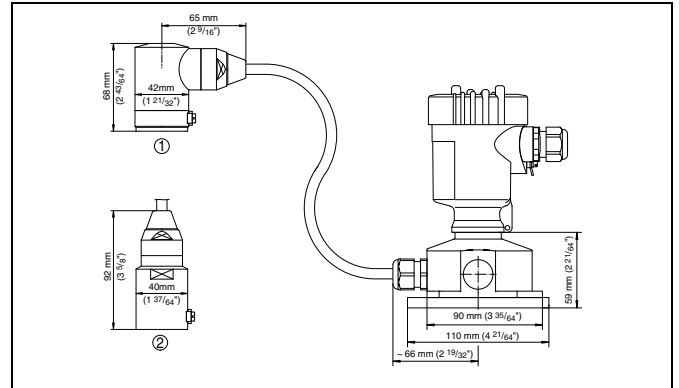


Fig. 25: Transmitter and remote housing with IP 68 version

- 1 Lateral cable outlet
- 2 Axial cable outlet

### VEGABAR 61 - flange fitting

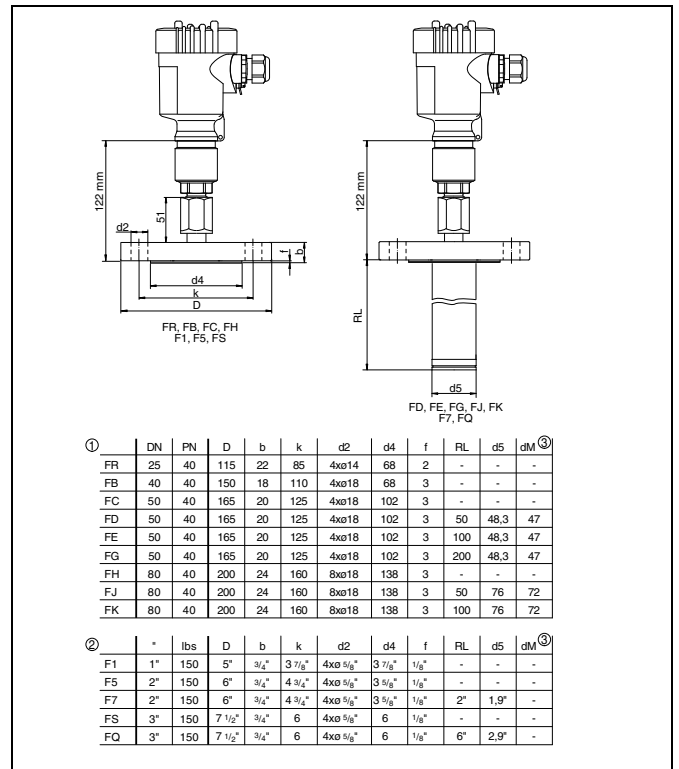


Fig. 26: VEGABAR 61 - flange version

- 1 Flange connection according to DIN 2501
- 2 Flange fitting according to ANSI B16.5
- 3 Diaphragm diameter

**VEGABAR 61 - threaded fitting**

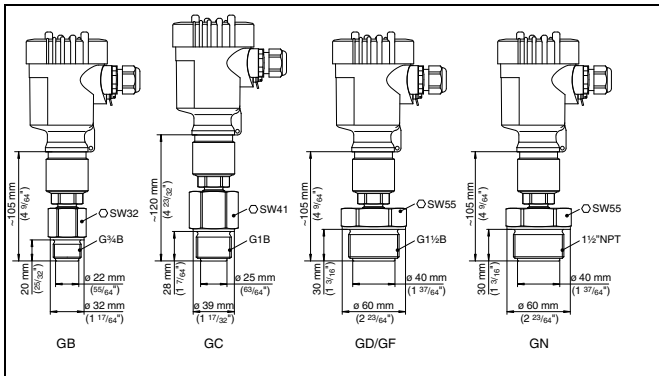


Fig. 27: VEGABAR 61 - threaded version

**VEGABAR 61 - tube isolated diaphragm**

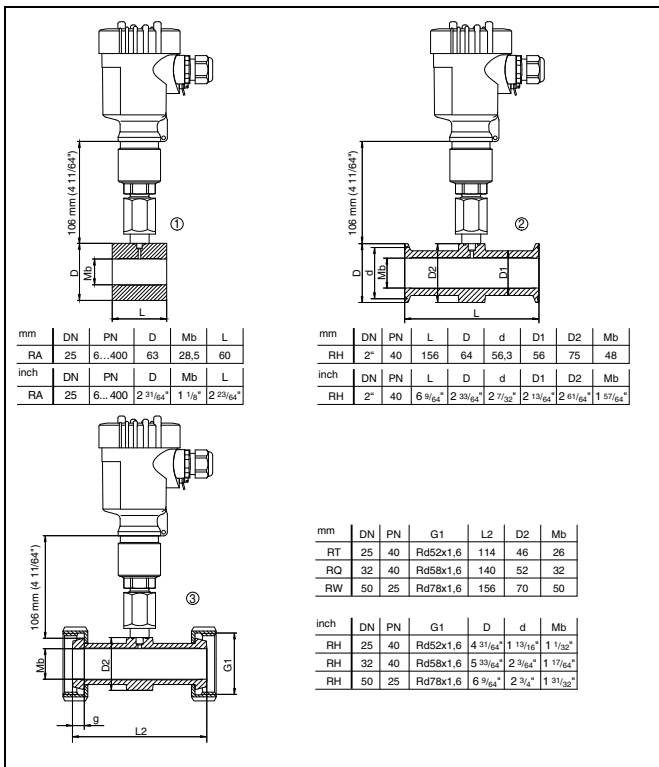


Fig. 28: VEGABAR 61 - tube isolated diaphragm

- 1 Tube isolating diaphragm for mounting between flanges
- 2 Tube isolating diaphragm with Clamp connection 2"
- 3 Tube isolating diaphragm with threaded fitting according to DIN 11851

**VEGABAR 63 - threaded fitting**

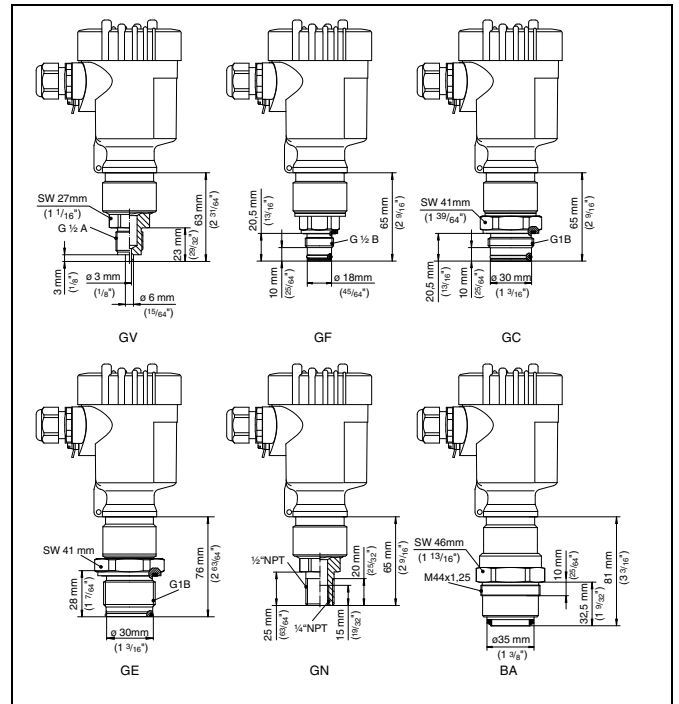


Fig. 29: VEGABAR 63 GV = G $\frac{1}{2}$  A manometer connection, GF = G $\frac{1}{2}$  A flush, GC = G1 A flush, GS = G $\frac{1}{2}$  A outer, GN =  $\frac{1}{2}$  NPT, BA = M44 x 1.25

**VEGABAR 63 - hygienic fitting**

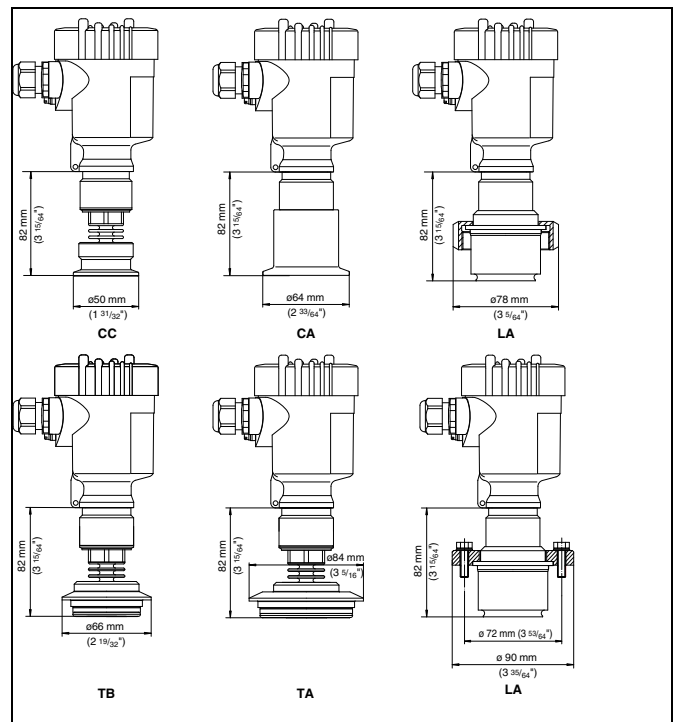


Fig. 30: VEGABAR 63 CC = Tri-Clamp 1 $\frac{1}{2}$ ", CA = Tri-Clamp 2", LA = hygienic fitting with compression nut, TB = Tuchenhagen Varivent DN 25, TC = Tuchenhagen Varivent DN 32, AA = DRD

**VEGABAR 64 - threaded fitting 1**

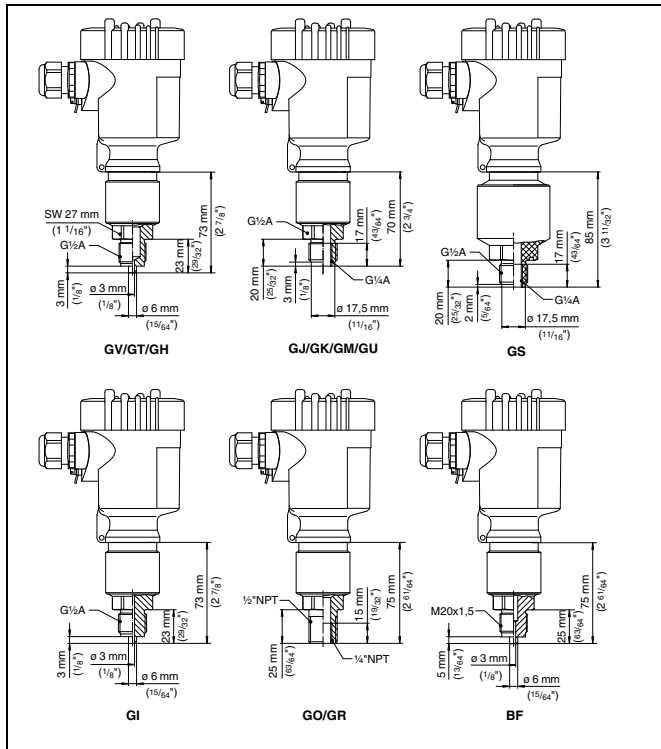


Fig. 31: VEGABAR 64 threaded fitting: GV/GT/GH = G $\frac{1}{2}$  A manometer connection EN 837, GJ/GK/GM/GU = G $\frac{1}{2}$  A inner G $\frac{1}{4}$  A, GS = G $\frac{1}{2}$  A inner G $\frac{1}{4}$  A PVDF, GI = G $\frac{1}{2}$  A manometer connection volume-reduced, GO/GR =  $\frac{1}{2}$  NPT, BF = M20 x 1.5 manometer connection EN 837

**VEGABAR 64 - threaded fitting 2**

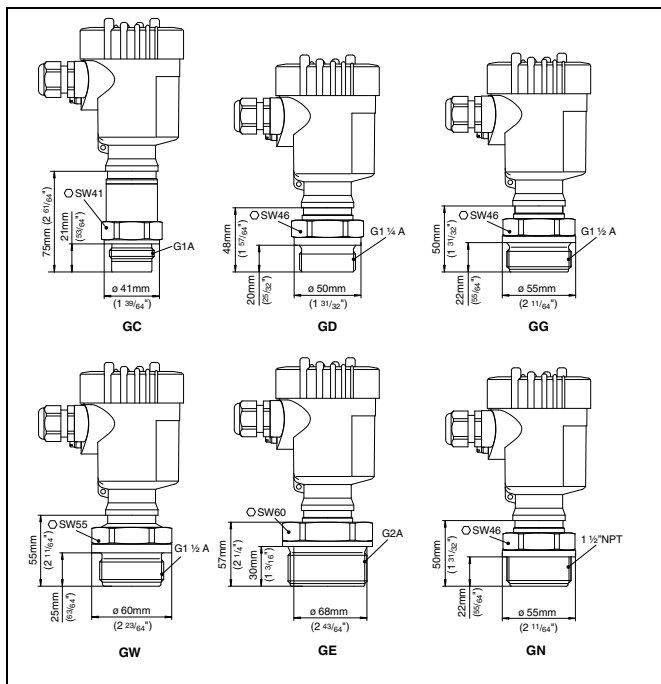


Fig. 32: VEGABAR 64 threaded fitting: GC = G1 A, GD = G1 $\frac{1}{4}$  A, GG = G1 $\frac{1}{2}$  A, GW = G1 $\frac{1}{2}$  A PVDF, GE = G2 A, GN =  $\frac{1}{2}$  NPT

**VEGABAR 64 - hygienic fitting 1**

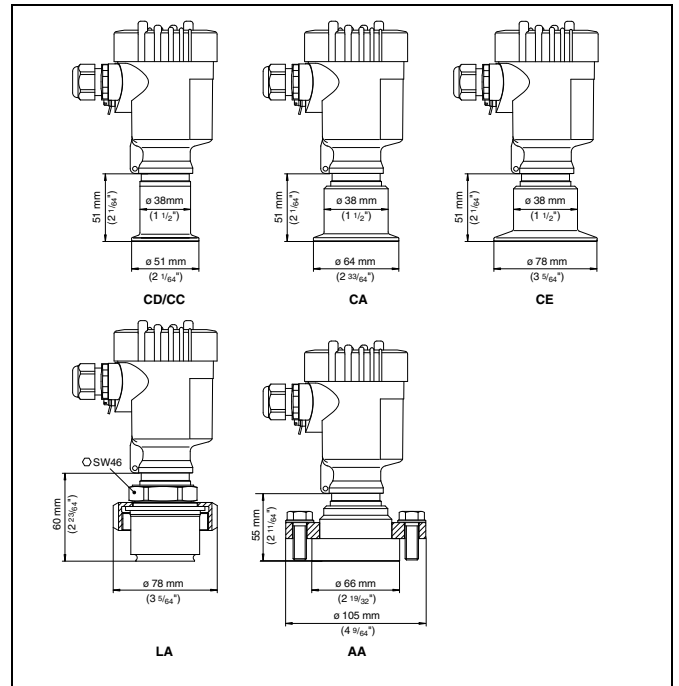


Fig. 33: VEGABAR 64 hygienic fitting: CD/CC = Tri-Clamp 1"/Tri-Clamp 1 $\frac{1}{2}$ ", CA = Tri-Clamp 2", CA = Tri-Clamp 2 $\frac{1}{2}$ ", LA = hygienic fitting with compression nut F40, AA = DRD

**VEGABAR 64 - hygienic fitting 2**

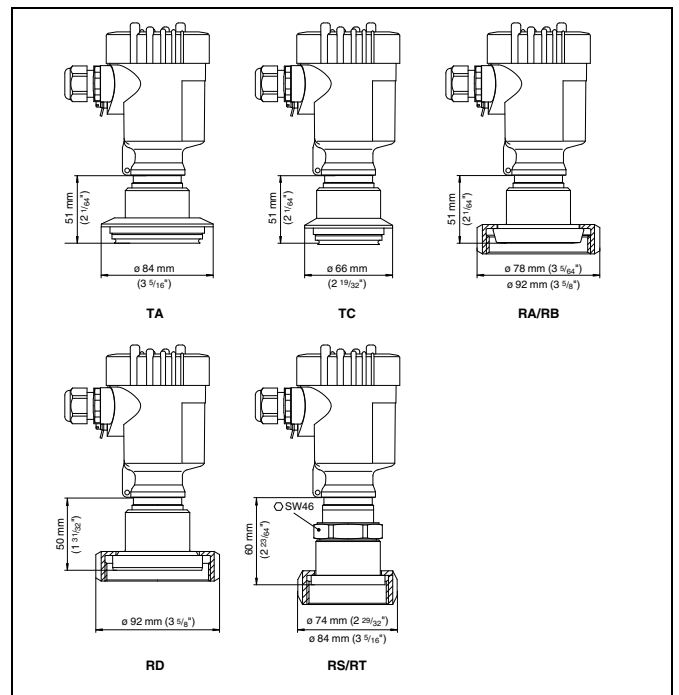


Fig. 34: VEGABAR 64 hygienic fitting: TA = Tuchenhagen Varivent DN 32, TB = Tuchenhagen Varivent DN 25, RA/RB = bolting DN 40/DN 50 according to DIN 11851, RD = bolting DN 50 according to DIN 11864, RS/RT = SMS DN 38/DN 51



**VEGABAR 64 - flange fitting**

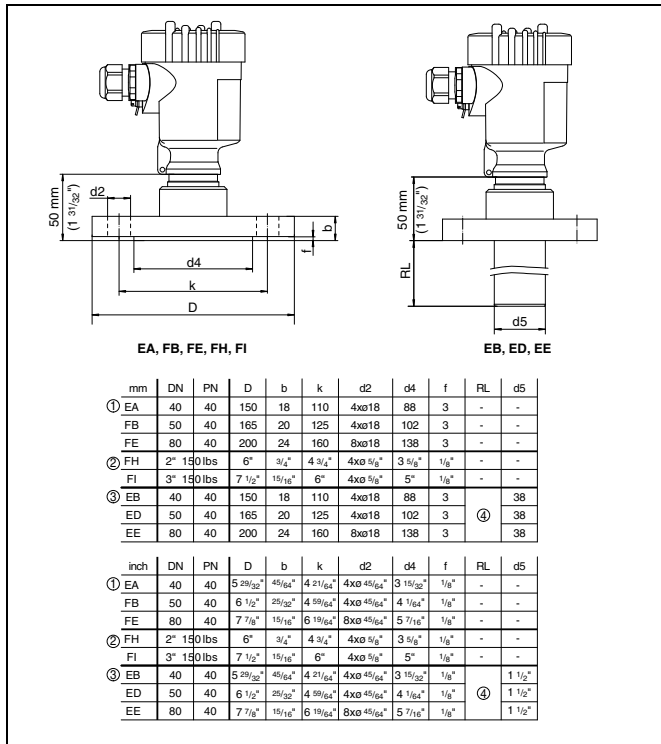


Fig. 35: VEGABAR 64 - flange fitting

- 1 Flange connection according to DIN 2501
- 2 Flange fitting according to ANSI B16.5
- 3 Flange fitting according to DIN 2501 with extension
- 4 Extension length, order-specific

**VEGABAR 64 - flange fitting with extension**

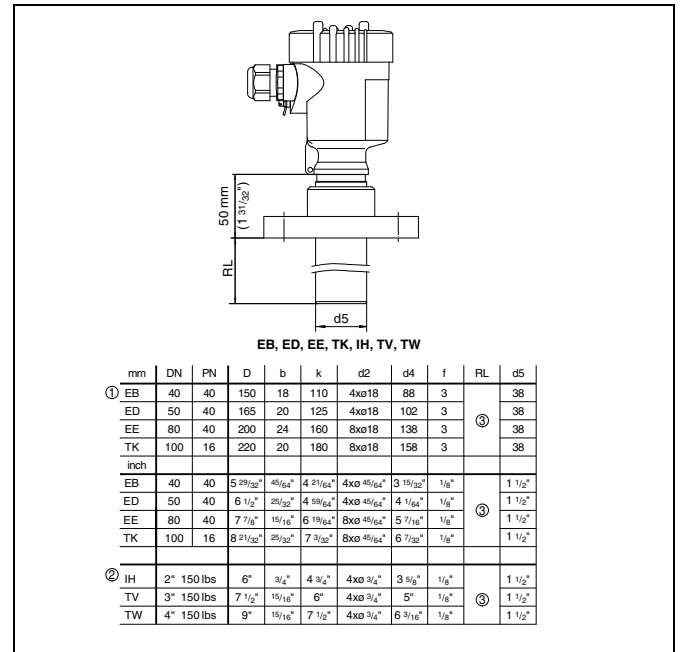


Fig. 36: VEGABAR 64 - flange fitting with extension

- 1 Flange connection according to DIN 2501
- 2 Flange fitting according to ANSI B16.5
- 3 Order-specific

**VEGABAR 64 - threaded fitting for paper industry**

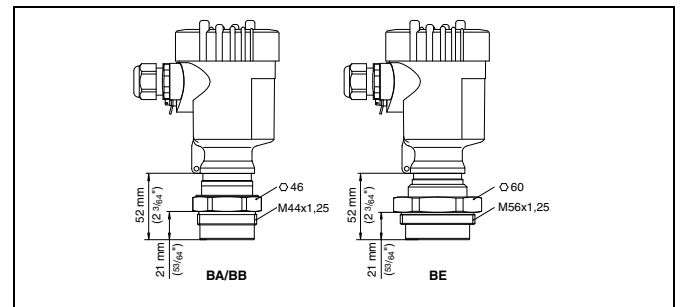


Fig. 37: VEGABAR 64 - threaded fitting for the paper industry: BA/BB = M44 x 1.25; BE = M 56 x 1.25

**VEGABAR 64 - extension fitting for paper industry**

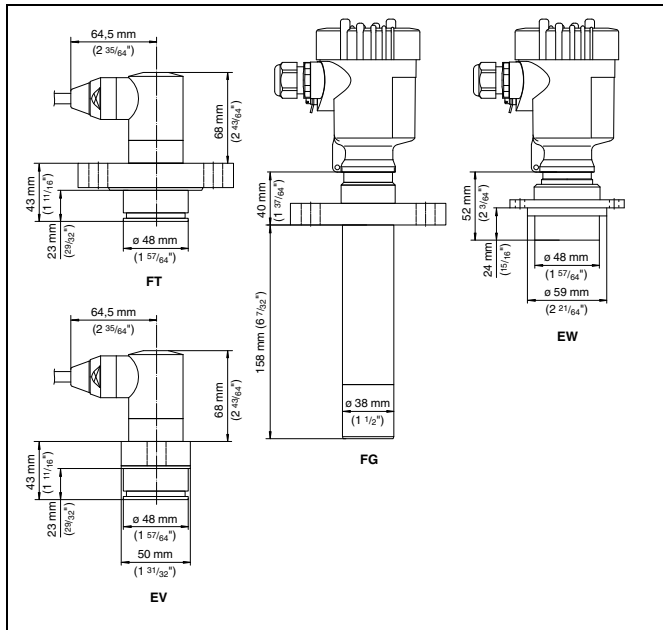


Fig. 38: VEGABAR 64 - extension fitting for paper industry: EV/FT = absolutely flush for pulper (EV 2-times flattened), FG = extension for ball valve fitting, EW = flange for manometer lug

**VEGABAR 65 - threaded fitting**

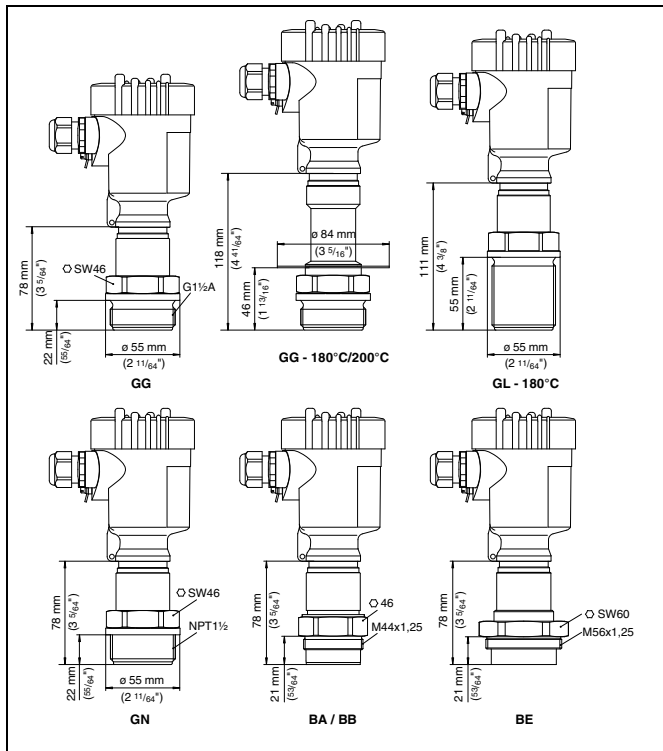


Fig. 39: VEGABAR 65 - threaded fitting: GG = G1½ A, GL = G1½ A thread length 55 mm, GN = 1½ NPT, BA/BB = M44 x 1.25; BE = M56 x 1.25

**VEGABAR 65 - hygienic fitting 1**

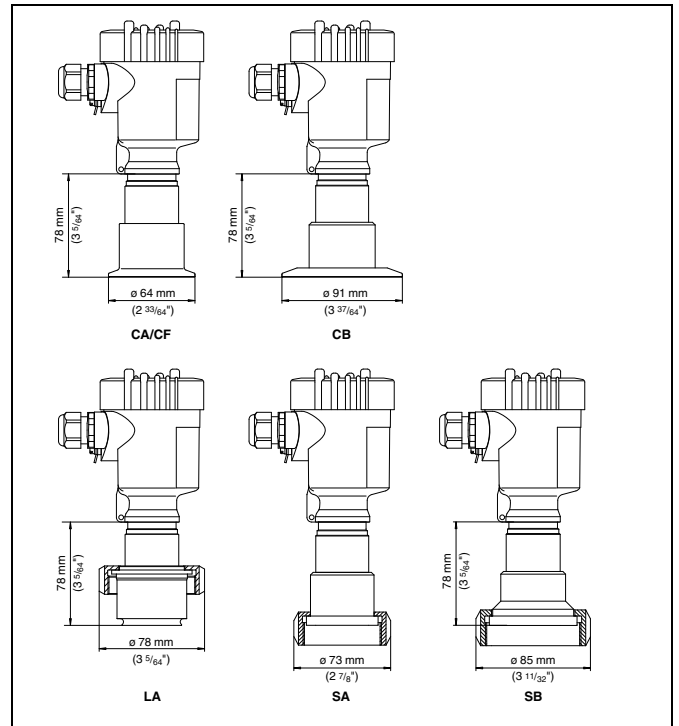


Fig. 40: VEGABAR 65 - hygienic fitting: CA/CF = Tri-Clamp 2"/Tri-Clamp 2½", CB = Tri-Clamp 3", LA = hygienic fitting with compression nut F40, SA = SMS DN 38, SB = SMS DN 51

**VEGABAR 65 - hygienic fitting 2**

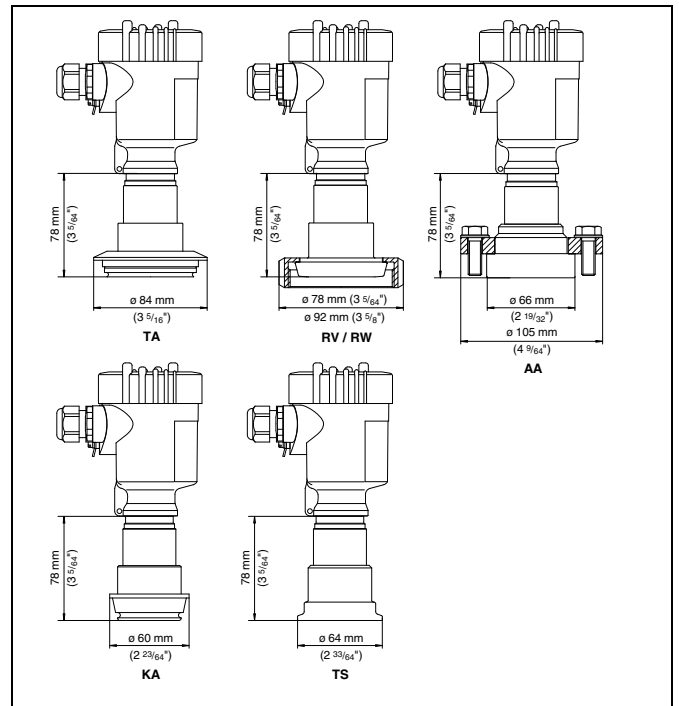


Fig. 41: VEGABAR 65 - hygienic fitting: TA = Tuchenhausen Varivent DN 32, RV/RW = bolting DN 40/DN 50 according to DIN 11851, AA = DRD, KA = conus DN 40

## 8 Product code

### VEGABAR 61

**Approval**  
**XX** without  
**XM** Ship approval  
**CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6  
**CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG  
**CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval  
**DX** ATEX II 1/2G, 2G EEx d ia IIC T6<sup>1)</sup>  
**GX** ATEX II 1/2D, 2D IP6X T  
**UX** FM(NI)CL I, DIV2, GP ABCD (DIP)CL II, III, DIV1, GP EFG  
**UF** FM(S)CL I, II, III, DIV 1, GP ABCDEF

**Process fitting / Material**  
**FR** Flange DN25PN40 Form D, DIN2501 / 316L  
**FC** Flange DN50PN40 Form D, DIN2501 / 316L  
**FD** Flange DN50PN40 with extension 50mm/a48.5 / 316L  
**FH** Flange DN80PN40 Form D, DIN2501 / 316L  
**FJ** Flange DN80PN40 with extension 50mm/a74 / 316L  
**F1** Flange 1" 150lb RF, ANSI B16.5 / 316L  
**F5** Flange 2" 150lb RF, ANSI B16.5 / 316L  
**F7** Flange 2" 150lb RF, ANSI w. extension 2"ø1.9" / 316L  
**FS** Flange 3" 150lb RF, ANSI B16.5 / 316L  
**FQ** Flange 3" 150lb RF, ANSI w.extens. 6"ø2.9" / 316L  
**RA** Tube isolator f.mounting betw.flanges DN25 / 316L  
**RH** Tube isolator with clamp connector 2" / 316L  
**RT** Bolting DN25PN40, DIN11851 / 316L  
**RQ** Bolting DN32PN40, DIN11851 / 316L  
**RW** Bolting DN50PN25, DIN11851 / 316L

**Isolating liquid / Temperature**  
**A** Silicone oil KN2.2 / -40...150°C(Pabs <1bar-40...150°C)  
**C** Silic. oil KN2.2+cool./-40...200°C(Pabs <1bar-40...150°C)  
**G** High-temp.oil+cooling/-10...300°C(Pabs<1bar-10...+200°C)  
**H** High-temp.oil+capil.1m/-10...400°C(Pabs<1bar-10...+200°C)  
**I** Halocarbon oil / -40...150°C (Pabs<1bar -40...+80°C)  
**J** Silicon-free liquid KN70 / -40...70°C (no vacuum)  
**M** Med.white oil KN62/-15...150°C(Pabs<1bar-15...150°C)  
**R** Med.white oil+cool.KN62 -15...200°C(Pabs<1bar-15...150°C)

**Diaphragm material**  
**1** 316L  
**2** Hastelloy C276  
**5** Tantalum<sup>2)</sup>  
**7** PTFE<sup>3)</sup>  
**8** 1.4435 with gold coating (25µm)

**Pressure / Measuring range**  
**C** rel. / 0...0.4 bar (0...40 kPa)  
**D** rel. / 0...1 bar (0...100 kPa)  
**E** rel. / 0...2.5 bar (0...250 kPa)  
**W** rel. / 0...100 bar (0...10000 kPa)  
**J** rel. / 0...250 bar (0...10000 kPa)  
**F** rel. / 0...5 bar (0...500 kPa)  
**G** rel. / 0...10 bar (0...1000 kPa)  
**T** rel. / 0...25 bar (0...2500 kPa)  
**N** rel. / 0...60 bar (0...6000 kPa)  
**P** rel. / -1...0 bar (-100...0 kPa)  
**Q** rel. / -1...1.5 bar (-100...150 kPa)  
**R** rel. / -1...5 bar (-100...500 kPa)  
**S** rel. / -1...10 bar (-100...1000 kPa)  
**H** rel. / -1...25 bar (-100...2500 kPa)  
**V** rel. / -1...60 bar (-100...6000 kPa)  
**M** rel. / -0.2...0.2 bar (-20...20 kPa)  
**O** rel. / -0.5...0.5 bar (-50...50 kPa)  
**1** abs. / 0...1 bar (0...100 kPa)<sup>4)</sup>  
**2** abs. / 0...2.5 bar (0...250 kPa)<sup>4)</sup>  
**3** abs. / 0...5 bar (0...500 kPa)<sup>4)</sup>  
**4** abs. / 0...10 bar (0...1000 kPa)<sup>4)</sup>  
**5** abs. / 0...25 bar (0...2500 kPa)<sup>4)</sup>

**Electronics**  
**H** 4...20mA/HART®  
**P** Profibus PA  
**F** Foundation Fieldbus

**Housing / Protection**  
**K** Plastic / IP66/IP67  
**A** Aluminium / IP66/IP67  
**D** Aluminium double chamber / IP66/IP67  
**8** Stainless steel (electropolished) 316L / IP66/IP68  
**T** PE-cable axial IP68, ext. housing plastic IP65<sup>3)</sup>

**Cable entry / Plug connection**  
**M** M20x1.5 / without  
**N** ½NPT / without

**Indicating/adjustment module (PLICSCOM)**  
**X** Without  
**A** Top mounted

**BR61.** [Diagram showing a row of 10 small boxes representing the product code structure]

<sup>1)</sup> Only in conjunction with Housing / Protection "D"  
<sup>2)</sup> Only with flange version  
<sup>3)</sup> Max. product temperature 200°C  
<sup>4)</sup> A vacuum service is carried out automatically for all absolute pressure measuring ranges  
<sup>5)</sup> incl. wall and rail mounting set

### VEGABAR 63

**Approval**  
**XX** without  
**XM** Ship approval  
**CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6  
**CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + ship approval  
**DX** ATEX II 1/2G, 2G EEx d ia IIC T6<sup>1)</sup>  
**GX** ATEX II 1/2D, 2D IP6X T

**Process fitting / Material**  
**GV** G½A, manometer connection EN837 PN160 / 316L  
**GF** G½A, front-flush / 316Ti with O-ring from 2.5bar  
**GC** G1A, front-flush / 316Ti with O-ring up to 1.6bar  
**GN** Thread ½NPT/316Ti  
**CC** Tri-Clamp 1½" PN16 / 316L  
**CA** Tri-Clamp 2" PN16 / 316L  
**LA** Hyg. fitting with compression nut F40 PN40 / 316L  
**RA** Bolting DN40PN40 DIN11851 / 316L  
**RC** Bolting DN40PN40 DIN11864 / 316L  
**RB** Bolting DN50PN25 DIN11851 / 316L  
**RD** Bolting DN50PN25 Form A DIN11864 / 316L  
**AA** DRD PN40 / 316L  
**EA** Flange DN40PN40 Form C, DIN2501 / 316L  
**FB** Flange DN50PN40 Form C, DIN2501 / 316L  
**FM** Flange DN80PN64 Form C, DIN2501/316L

**Seal**  
**1** FKM (Viton)<sup>2)</sup>  
**3** EPDM<sup>2)</sup>  
**4** NBR<sup>2)</sup>  
**X** without  
**R** Chemraz

**Pressure / Meas. range**  
**C** rel. / 0...0.4bar (0...40kPa)  
**D** rel. / 0...1.6bar (0...160kPa)  
**U** rel. / 0...4.0bar (0...4000kPa)  
**W** rel. / 0...100.0bar (0...10000kPa)  
**X** rel. / 0...250.0bar (0...25000kPa)  
**R** rel. / -1...0.0bar (-100...0kPa)  
**S** rel. / -1...0.6bar (-100...60kPa)  
**O** rel. / -1...3.0bar (-100...300kPa)  
**P** rel. / -1...5.0bar (-100...500kPa)  
**Q** rel. / -1...15.0bar (-100...1500kPa)  
**Z** rel. / 0...600.0bar (0...60000kPa)  
**1** abs. / 0...0.4bar (0...40kPa)  
**2** abs. / 0...1.6bar (0...160kPa)  
**3** abs. / 0...6.0bar (0...600kPa)  
**4** abs. / 0...16.0bar (0...1600kPa)

**Electronics**  
**H** 4...20mA/HART®  
**P** Profibus PA  
**F** Foundation Fieldbus

**Housing / Protection**  
**K** Plastic / IP66/IP67  
**A** Aluminium / IP66/IP67  
**D** Aluminium double chamber / IP66/IP67  
**8** Stainless steel (electropolished) 316L / IP66/IP68  
**T** PE-cable axial IP68, ext. housing plastic IP65<sup>3)</sup>

**Cable entry / Plug connection**  
**M** M20x1.5 / without  
**N** ½NPT / without

**Indicating/adjustment module (PLICSCOM)**  
**X** Without  
**A** Top mounted

**BR63.** [Diagram showing a row of 10 small boxes representing the product code structure]

<sup>1)</sup> Only in conjunction with Housing / Protection "D"  
<sup>2)</sup> Only with front-flush threaded version  
<sup>3)</sup> incl. wall and rail mounting set

VEGABAR 64

**Approval**  
**XX** without  
**XM** Ship approval  
**CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6  
**CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG  
**CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval  
**DX** ATEX II 1/2G, 2G EEx d ia IIC T6<sup>1)</sup>  
**GX** ATEX II 1/2D, 2D IP6X T  
**UX** FM(Ni)CL I, DIV2, GP ABCD (DIP)CL II, III, DIV1, GP EFG  
**UF** FM(S)CL I, II, III, DIV 1, GP ABCDEF

**Process fitting / Material**  
**GV** G $\frac{1}{2}$ A, manometer connection EN837 PN160 / 316L  
**GH** G $\frac{1}{2}$ A, manometer connection / Hastelloy  
**GJ** G $\frac{1}{2}$ A, inner G $\frac{1}{4}$ A, PN160 / 316L  
**GS** G $\frac{1}{2}$ A, inner G $\frac{1}{4}$ A, PN10 / PVDF  
**GM** G $\frac{1}{2}$ A, inner G $\frac{1}{4}$ A, PN160/Hastelloy C276  
**GG** Thread G1 $\frac{1}{2}$ A PN60 / 316L  
**GW** Thread G1 $\frac{1}{2}$ A PN10 / PVDF  
**GN** Thread 1 $\frac{1}{2}$ NPT PN60 / 316L  
**GO**  $\frac{1}{2}$ NPT, inner  $\frac{1}{4}$ NPT, PN160 / 316L  
**GR**  $\frac{1}{2}$ NPT, inner  $\frac{1}{4}$ NPT, PN160 / Hastelloy  
**CA** Tri-Clamp 2" PN16 / 316L  
**LA** Hyg. connection w. compression nut F40 PN40 / 316L  
**TA** Varivent N50-40 PN25 / 316L  
**RA** Bolting DN40PN40 DIN11851 / 316L  
**RC** Bolting DN40PN25 DIN11864 ZG2820/316L  
**RB** Bolting DN50PN25 DIN11851 / 316L  
**RD** Bolting DN50PN25 Form A DIN11864 / 316L  
**RS** SMS DN38 PN40 / 316L  
**AA** DRD PN40 / 316L  
**BA** M44x1.25; pressure screw Alu PN25 / 316L  
**BB** M44x1.25; pressure screw PN60 / 316L  
**SL** Small flange DN10 PN1.5 DIN 28403-ISO2861/316L  
**EA** Flange DN40PN40 Form C, DIN2501 / 316L  
**FW** Flange DN50PN16 / PVDF  
**FB** Flange DN50PN40 Form C, DIN2501 / 316L  
**TR** Flange with extens. DN50PN40 ZG2659, 316L  
**FE** Flange DN80PN40 Form C, DIN2501 / 316L  
**FM** Flange DN80PN64 Form C, DIN2501/316L  
**EV** For headbox 2-fold flat-topped ZG2819/316L  
**FQ** Flange 1 $\frac{1}{2}$ " 150lb RF, ANSI B16.5/316L  
**FH** Flange 2" 150lb RF, ANSI B16.5 / 316L  
**FI** Flange 3" 150lb RF, ANSI B16.5 / 316L

**Seal measuring cell / Process temperature**  
**1** FKM (Viton)  
**2** Kalrez 6375  
**3** EPDM  
**R** Chemraz 535

**Pressure / Measuring range**  
**A** rel. / 0...0.1bar (0...10kPa)  
**B** rel. / 0...0.2bar (0...20kPa)  
**C** rel. / 0...0.4bar (0...40kPa)  
**D** rel. / 0...1.0bar (0...100kPa)  
**E** rel. / 0...2.5bar (0...250kPa)  
**F** rel. / 0...5.0bar (0...500kPa)  
**G** rel. / 0...10.0bar (0...1000kPa)  
**H** rel. / 0...25.0bar (0...2500kPa)  
**U** rel. / 0...60.0bar (0...6000kPa)  
**P** rel. / -1...0.0bar (-100...0kPa)  
**Q** rel. / -1...1.5bar (-100...150kPa)  
**R** rel. / -1...5.0bar (-100...500kPa)  
**S** rel. / -1...10.0bar (-100...1000kPa)  
**T** rel. / -1...25.0bar (-100...2500kPa)  
**W** rel. / -1...60.0bar (-100...6000kPa)  
**K** rel. / -0.05...0.05bar (-5...5kPa)  
**L** rel. / -0.1...0.1bar (-10...10kPa)  
**M** rel. / -0.2...0.2bar (-20...20kPa)  
**O** rel. / -0.5...0.5bar (-50...50kPa)  
**1** abs. / 0...0.1bar (0...10kPa)<sup>2)</sup>  
**1** abs. / 0...1.0bar (0...100kPa)  
**2** abs. / 0...2.5bar (0...250kPa)  
**3** abs. / 0...5.0bar (0...500kPa)  
**4** abs. / 0...10.0bar (0...1000kPa)  
**5** abs. / 0...25.0bar (0...2500kPa)

**Electronics**  
**H** 4...20mA/HART®  
**P** Profibus PA  
**F** Foundation Fieldbus

**Housing / Protection**  
**K** Plastic / IP66/IP67  
**A** Aluminium / IP66/IP67  
**D** Aluminium double chamber / IP66/IP67  
**8** Stainless steel (electropolished) 316L / IP66/IP68  
**T** PE cable axial IP68, ext. housing plastic IP65<sup>3)</sup>

**Cable entry / Plug connection**  
**M** M20x1.5 / without  
**N**  $\frac{1}{2}$ NPT / without

**Indicating/adjustment module (PLICSCOM)**  
**X** Without  
**A** Top mounted

**BR64.** [Diagram showing 10 pins]

<sup>1)</sup> Only in conjunction with Housing / Protection "D"  
<sup>2)</sup> Deviation in characteristic 0.25%  
<sup>3)</sup> incl. wall and rail mounting set

VEGABAR 65

**Approval**  
**XX** without  
**XM** Ship approval  
**CX** ATEX II 1G, 1/2G, 2G EEx ia IIC T6  
**CA** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + WHG  
**CM** ATEX II 1G, 1/2G, 2G EEx ia IIC T6 + Ship approval  
**DX** ATEX II 1/2G, 2G EEx d ia IIC T6<sup>1)</sup>  
**GX** ATEX II 1/2D, 2D IP6X T  
**UX** FM(Ni)CL I, DIV2, GP ABCD (DIP)CL II, III, DIV1, GP EFG  
**UF** FM(S)CL I, II, III, DIV 1, GP ABCDEF

**Process fitting / Material**  
**FB** Flange DN40PN40 Form C, DIN2501 / 316L  
**FC** Flange DN50PN40 Form C, DIN2501 / 316L  
**TR** Flange with extens. DN50PN40 ZG2873, 316L  
**FH** Flange DN80PN40 Form C, DIN2501 / 316L  
**F5** Flange 2" 150lb RF, ANSI B16.5 / 316L  
**GG** Thread G1 $\frac{1}{2}$ A PN60 / 316L  
**GN** Thread 1 $\frac{1}{2}$ NPT PN60 / 316L  
**CA** Tri-Clamp 2" PN16 / 316L  
**LA** Hygienic connec. w. compression nut F40PN40 / 316L  
**TA** Varivent N50-40 PN25 / 316L  
**RV** Bolting DN40PN40, DIN11851 / 316L  
**RW** Bolting DN50PN25, DIN11851 / 316L  
**AA** DRD PN40 / 316L  
**BB** M44x1.25 with pressure screw 316L PN60 / 316L  
**SB** SMS DN51 PN6 / 316L

**Isolating liquid / Temperature**  
**M** Med.white oil/ -12...140°C (Pabs<1bar-12...130°C)  
**N** Med.white oil/ -12...120°C (Pabs<1bar-12...1120°C)  
**S** Med.w.oil,cool./-12...180°C (Pabs<1bar-12...130°C)  
**R** Med.w.oil,cool./-12...200°C (Pabs<1bar-12...130°C)

**Pressure / Measuring range**  
**A** rel. / 0...0.1bar (0...10kPa)  
**B** rel. / 0...0.2bar (0...20kPa)  
**C** rel. / 0...0.4bar (0...40kPa)  
**D** rel. / 0...1.0bar (0...100kPa)  
**E** rel. / 0...2.5bar (0...250kPa)  
**F** rel. / 0...5.0bar (0...500kPa)  
**G** rel. / 0...10.0bar (0...1000kPa)  
**T** rel. / 0...25.0bar (0...2500kPa)  
**P** rel. / -1...0.0bar (-100...0kPa)  
**Q** rel. / -1...1.5bar (-100...150kPa)  
**R** rel. / -1...5.0bar (-100...500kPa)  
**S** rel. / -1...10.0bar (-100...1000kPa)  
**H** rel. / -1...25.0bar (-100...2500kPa)  
**K** rel. / -0.05...0.05bar (-5...5kPa)  
**L** rel. / -0.1...0.1bar (-10...10kPa)  
**M** rel. / -0.2...0.2bar (-20...20kPa)  
**O** rel. / -0.5...0.5bar (-50...50kPa)  
**1** abs. / 0...1.0bar (0...100kPa)  
**2** abs. / 0...2.5bar (0...250kPa)  
**3** abs. / 0...5.0bar (0...500kPa)  
**4** abs. / 0...10.0bar (0...1000kPa)  
**5** abs. / 0...25.0bar (0...2500kPa)

**Electronics**  
**H** 4...20mA/HART®  
**P** Profibus PA  
**F** Foundation Fieldbus

**Housing / Protection**  
**K** Plastic / IP66/IP67  
**A** Aluminium / IP66/IP67  
**D** Aluminium double chamber / IP66/IP67  
**8** Stainless steel (electropolished) 316L / IP66/IP68  
**T** PE-cable axial IP68, ext. housing plastic IP65<sup>3)</sup>

**Cable entry / Plug connection**  
**M** M20x1.5 / without  
**N**  $\frac{1}{2}$ NPT / without

**Indicating/adjustment module (PLICSCOM)**  
**X** Without  
**A** Top mounted

**BR65.** [Diagram showing 10 pins]

<sup>1)</sup> Only in conjunction with Housing / Protection "D"  
<sup>2)</sup> incl. wall and rail mounting set









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