

Level and pressure measurement

Hydrostatic

VEGABAR 54
VEGABAR 64
VEGABAR 65



Product Information

VEGA

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Take note of safety instructions for Ex applications



With Ex applications, please note the Ex-specific safety information on our homepage www.vega.com/services/downloads and in the documentation that 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 54, 64 and 65 sensors are designed for front flush level and process measurement of gases, vapours and liquids. Application-optimised housings and materials ensure reliable use even in harsh environments. For extremely moist areas, IP 68 version of VEGABAR is available. Comprehensive adjustment and indicating options as well as elec. modules with signal outputs 4 ... 20 mA/HART, Profibus PA and Foundation Fieldbus make for easy integration into the system environment.

VEGABAR 54 and 64 sensors are especially suited for use in abrasive mediums in the paper industry or in waste water treatment. VEGABAR 54 with the small CERTEC® measuring cell is available with process fittings from 1/2". It is particularly suitable for small pipelines as well as the ball valve fitting PASVE as connection option. VEGABAR 64 with standard CERTEC® measuring cell is available with various thread and flange fittings as well as materials for universal applications.¹⁾

VEGABAR 65, with its hygienic fittings, is particularly suitable for the food processing and pharmaceutical industry.

User advantages

- high long-term stability <0.1 %/2 years
- small deviation in characteristics <0.075 %, optional <0.05 %
- up to 150-fold overload resistance
- Product temperature up to 200 °C
- Measuring ranges up to 60 bar
- Completely flush process fittings
- Turn Down up to 1:100 and higher
- Functional safety acc. to IEC 61508-4 up to SIL3
- Exchangeable indicating and adjustment module
- Quick setup by easy menu guidance
- Comprehensive monitoring and diagnostics functions

Measuring principle

The process pressure causes via the diaphragm a change of an elec. 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 54, 64

The sensor element of VEGABAR 54 and 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 PLICSCOM or processed via the signal output.

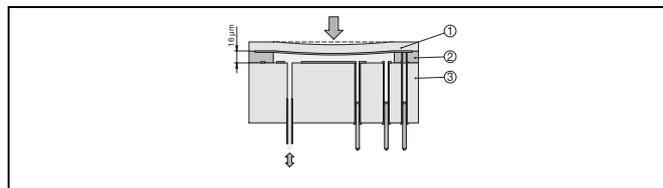


Fig. 1: Configuration of the CERTEC® measuring cell in VEGABAR 54 and 64

- 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 that the temperature influence is directly compensated mechanically.

The process pressure causes via the respective diaphragm a change in an elec. parameter of the measuring cell. This change is converted into a corresponding output signal.

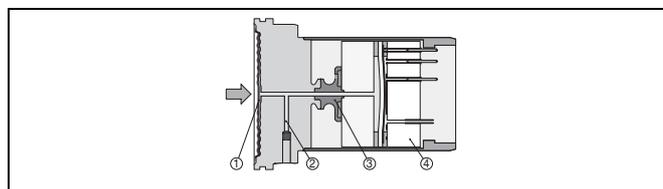


Fig. 2: Configuration of the METEC® measuring cell in VEGABAR 65

- 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 54, 64 and 65 pressure transmitters are available with different housing protections:

¹⁾ PASVE: Trade name of Satron Instruments Oy.

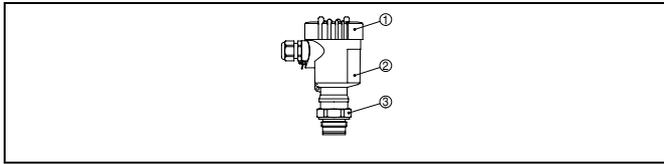


Fig. 3: Example of a VEGABAR 54 with connection G1 A and plastic housing in protection IP 66/IP 67

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

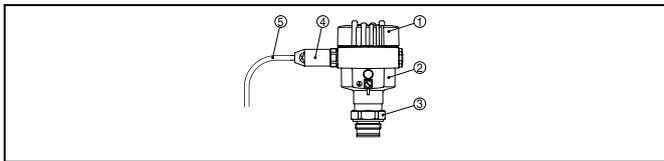


Fig. 4: Example of a VEGABAR 54 with connection G1 A and Aluminium housing in protection IP 66/IP 68, 1 bar

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

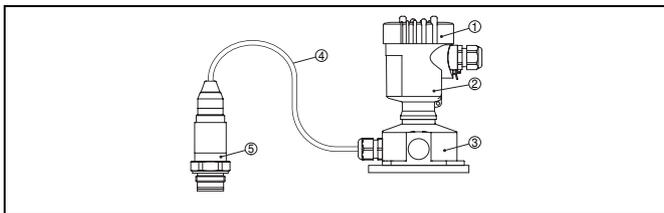


Fig. 5: Example of a connection G1 A and stainless steel housing in protection IP 68 and remote electronics

- 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

Storage tower

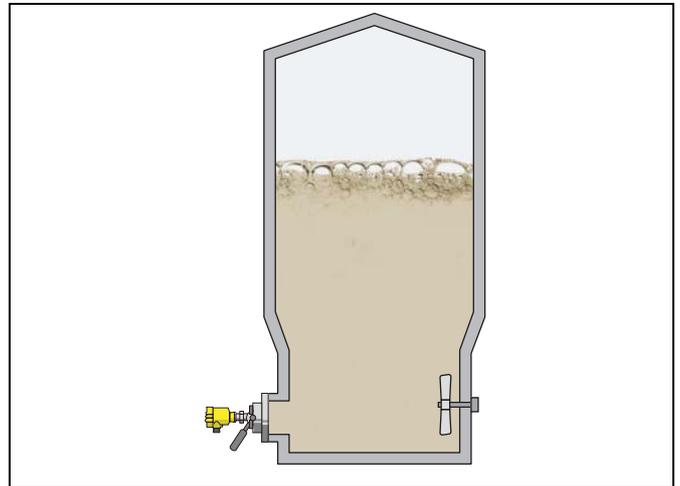


Fig. 6: Level measurement on storage towers with VEGABAR 54

In the paper industry, the prepared stock is stored in large storage towers. Before further processing, the material is made pumpable by mixing in process water with an agitator. The level measurement in the lower range detects the substance suspension and prevents the agitator from running dry. For this application, the pressure transmitter VEGABAR 54 with the ceramic CERTEC® measuring cell in combination with a ball valve is used. The advantages are: front flush mounting in ball valve fitting, mounting and dismantling without emptying the storage tower.

Pressurised screen

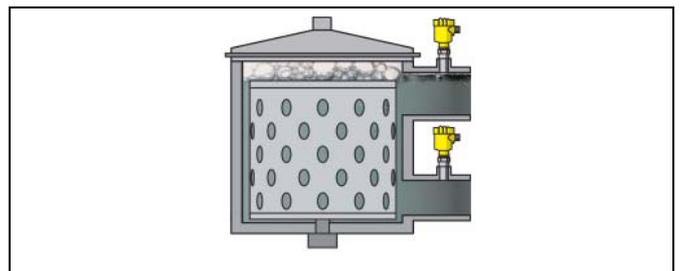


Fig. 7: Pressure measurement on a screen with VEGABAR 54

Screening machines are used in the paper industry for fibre separation. They have an inlet, an outlet for good material and an overflow for sorted out material. For effective screening, the machine must be run with the correct operating parameters. To this end, the pressure in the inlet and outlet is measured with the VEGABAR 54 with small ceramic CERTEC® measuring cell. It is front flush and hence self-cleaning as well as highly abrasion resistant.

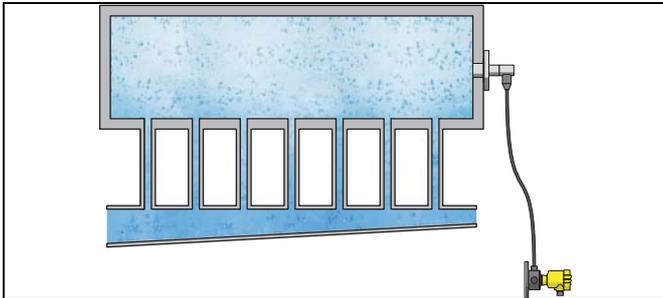
Headbox

Fig. 8: Pressure measurement on the headbox of a paper machine with VEGABAR 64

The pressure measurement in the headbox is used for speed control of the mixing pump. This must be a high precision measurement and reactionless. The optimum solution is VEGABAR 64 in completely front flush version, accuracy class 0.05 and high protection IP 68.

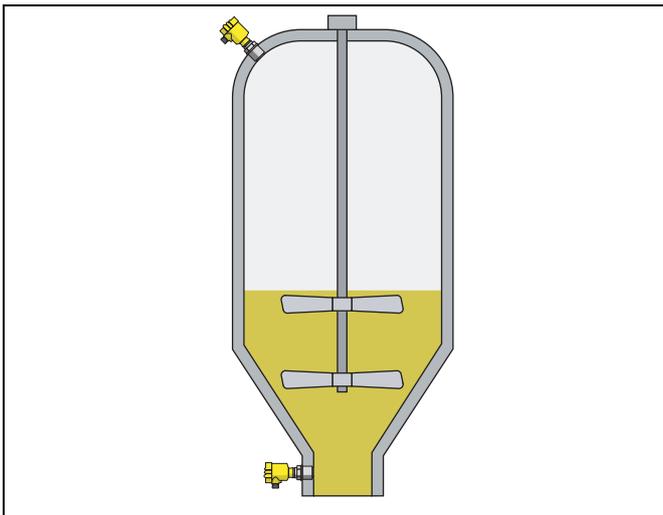
Feeding vessels

Fig. 9: Level and pressure measurement in a feeding vessel in the ointment production with VEGABAR 65

Batch vessels are used for the manufacture of 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.

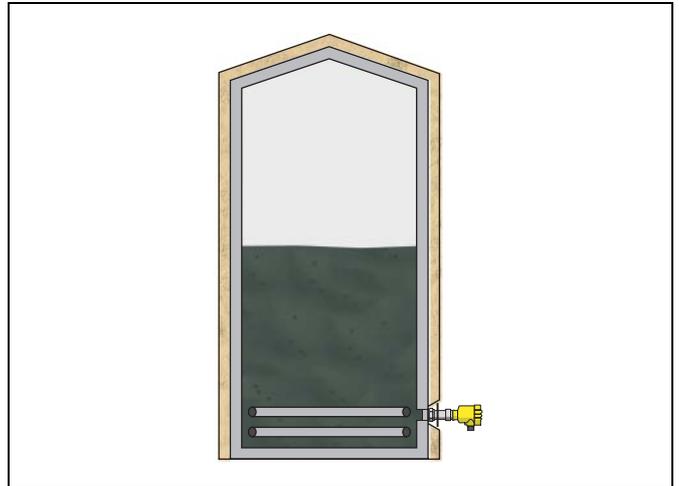
Bitumen vessel

Fig. 10: Level measurement in a bitumen vessel with VEGABAR 65

VEGABAR 65 pressure transmitter is well suited for hydrostatic level measurement of bitumen. Thanks to its metal METEC® measuring cell with self-compensating temperature reaction, the transmitter has excellent temperature characteristics. The special configuration of the measuring cell ensures temperature decoupling between process fittings and electronics and thus enables use up to 200 °C (392 °F).

**Information:**

Continuative documentation:

- Operating instructions manual "VEGABAR 54"
- Operating instructions manual "VEGABAR 64"
- Operating instructions manual "VEGABAR 65"
- Supplementary instructions manual "Functional safety VEGABAR series 50 and 60 - 4 ... 20 mA/HART"

2 Type overview

VEGABAR 54



VEGABAR 64



VEGABAR 65



Measuring cell:	small CERTEC®	CERTEC®	METEC®
Diaphragm:	Ceramic	Ceramic	Metal
Products:	gases, vapours and liquids, also with abrasive substances	gases, vapours and liquids, also with abrasive substances	gases, vapours and liquids also with higher temperatures
Process fitting:	Threads from 1/2", flanges from DN 25, fittings for the paper industry thread 1" suitable for PASVE, thread M30x1.5, PMC from 1"	thread from 1", flanges from DN 25, fittings for the food processing and paper industry	thread from 1 1/2", flanges from DN 20, fittings for the food processing industry
Material:	316L	316L, PVDF, PVDF plated, Hastelloy C4 plated	316L, Hastelloy C276
Measuring range:	-1 ... 0 bar up to -1 ... 60 bar (-14.5 ... 0 psi up to -14.5 ... 870 psi)	-1 ... 0 bar up to -1 ... 60 bar (-14.5 ... 0 psi up to -14.5 ... 870 psi)	-1 ... 0 bar up to -1 ... 25 bar (-14.5 ... 0 psi up to -14.5 ... 363 psi)
Process temperature:	-40 ... +120 °C (-40 ... +248 °F)	-40 ... +150 °C (-40 ... +302 °F)	-12 ... +200 °C (-40 ... +392 °F)
Deviation in characteristics:	<0.1 %	<0.075 % or <0.05 %	<0.075 %
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	up to SIL3

Indicating and adjustment module



PLICSCOM

Housing



Plastic



Stainless steel



Aluminium



Aluminium
(double chamber)

Electronics



4 ... 20 mA/HART



Profibus PA



Foundation
Fieldbus

Process fitting



Thread



Flange



Sanitary

Sensors



CERTEC® -
Measuring cell



METEC® -
Measuring cell

Approvals



SIL



Overfill protection



Gas explosion pro-
tection



Dust explosion pro-
tection



EHEDG



Ship



FM



CSA

3 Mounting information

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.

When installing plics® instruments, choose a position you can easily reach for mounting and connecting as well as later retrofitting of an indicating and adjustment module PLICSCOM. The housing can be rotated by 330° without the use of any tools. You can also install the indicating and adjustment module PLICSCOM in four different positions (each displaced by 90°).

4 Electrical connection

4.1 General requirements

The supply voltage range can differ depending on the instrument version. The exact range is stated in the "Technical data".

Take note of country-specific installation standards (e.g. the VDE regulations in Germany) as well as prevailing safety regulations and accident prevention rules.



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

General

Power supply and current signal are carried over the same two-wire connection cable. The requirements on the power supply are stated in the Technical Data of this Product Information manual.

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 acc. to DIN VDE 0106 part 101 is ensured for VEGABAR.

Profibus PA

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

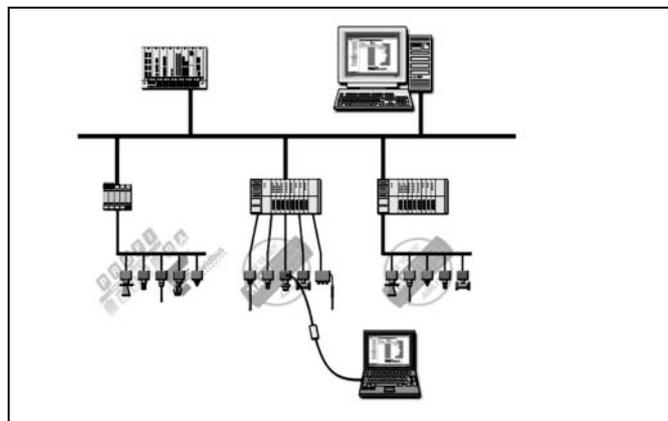


Fig. 11: Integration of instruments in a Profibus PA system via segment coupler DP/PA or data recording systems with Profibus PA input card

Foundation Fieldbus

Power supply via the H1 Fieldbus cable.

4.3 Connection cable

General

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 acc. to the appropriate bus specification. VEGABAR is connected respectively with screened cable acc. 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 plans

Single chamber housing

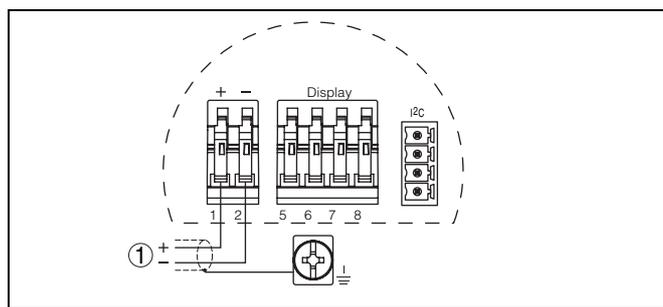


Fig. 12: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Power supply and signal output

Double chamber housing - two-wire

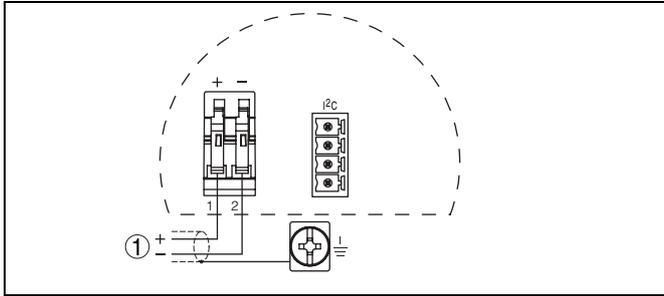


Fig. 13: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Power supply and signal output

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

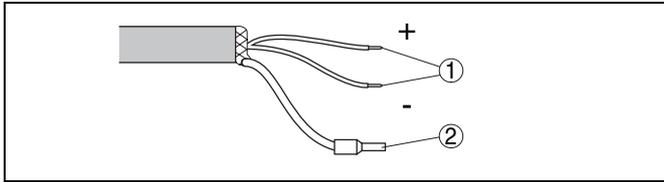


Fig. 14: Wire assignment, connection cable

1 br (+) and bl (-) for power supply or to the processing system
 2 Screen

Terminal assignment, housing socket with version IP 68

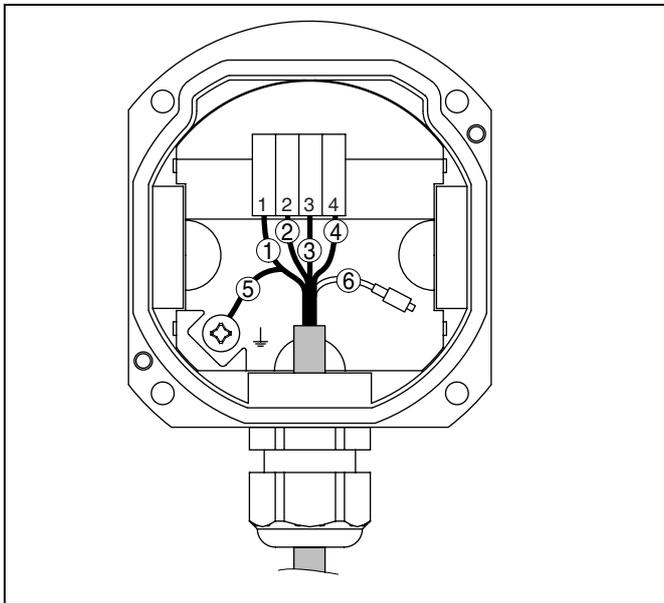


Fig. 15: Connection of the sensor in the housing socket

- 1 Brown
- 2 Blue
- 3 Yellow
- 4 White
- 5 Screen
- 6 Breather capillaries

5 Adjustment

5.1 Overview

VEGABAR can be adjusted with the following adjustment media:

- the indicating and adjustment module PLICSCOM
- an adjustment software acc. 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 VEGABAR, optionally also in PLICSCOM or in the adjustment program.

5.2 Compatibility acc. to NAMUR NE 53

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

- sensor software for DTM-VEGABAR HART, PA or FF
- DTM VEGABAR for adjustment software PACTware™
- 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 made via four keys and a clear, graphic-capable dot matrix indication. 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.

Depending on the hardware version of PLICSCOM or the respective sensor electronics, an integrated backlight can be switched on via the adjustment menu.²⁾

PLICSCOM adjustment

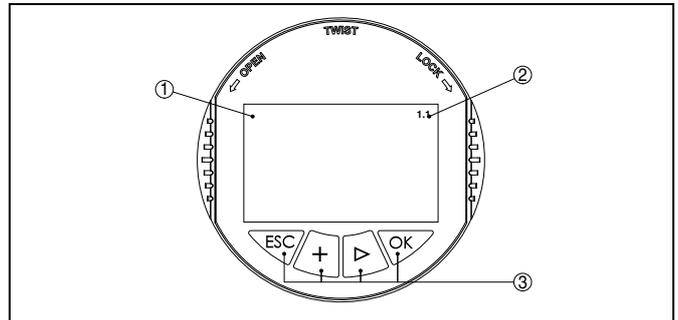


Fig. 16: Indicating and adjustment elements

- 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
 - editing position
- **[+]** key:
 - modify value of a parameter
- **[ESC]** key:
 - interrupt input
 - jump to the next higher menu

5.4 Adjustment with PACTware™

PACTware™/DTM

Independent of the respective signal output, whether 4 ... 20 mA/HART, Profibus PA or Foundation Fieldbus, VEGABAR sensors can be adjusted directly on the instrument via PACTware™. To adjust with PACTware™, an instrument driver for the particular VEGABAR model is required.

All currently available VEGA DTMs are provided in a DTM Collection with the current PACTware™ version on CD. They are available from the responsible VEGA agency for a token fee. The basic version of this DTM Collection incl. PACTware™ is available as a free-of-charge download from the Internet.

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

Connecting the PC directly to the sensor

²⁾ This function is for instruments with StEx, WHG or ship approval as well as country-specific approvals such as those acc. to FM or CSA, available at a later date.

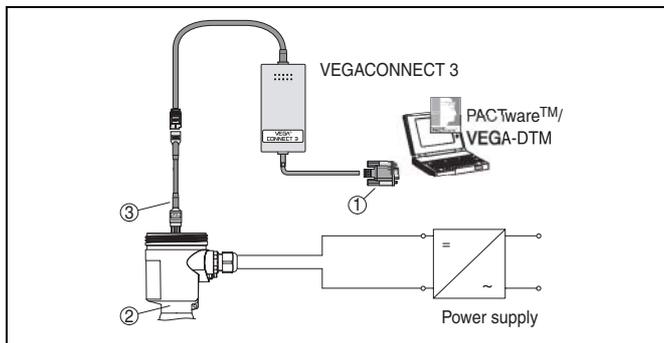


Fig. 17: PC connected directly to the sensor

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

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

Connecting the PC to the signal cable (4 ... 20 mA/HART)

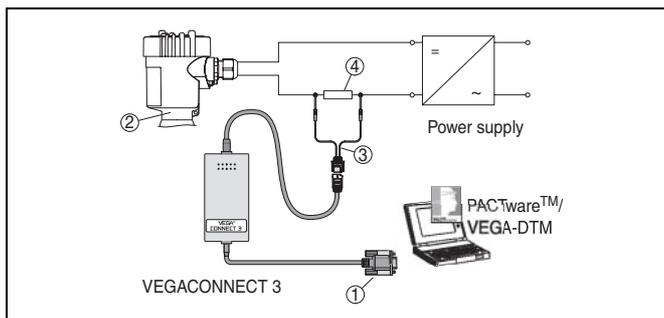


Fig. 18: Connecting the PC to the signal cable

- 1 RS232 connection
- 2 VEGABAR
- 3 HART adapter cable for VEGACONNECT 3
- 4 HART resistance 250 Ohm

To adjust with PACTware™, a VEGACONNECT 3 with HART adapter cable (art. no. 2.25397) as well as a power supply unit and a HART resistor with approx. 250 Ohm is required in addition to the PC and the suitable VEGA DTM.



Note:

With power supply units with integrated HART resistance (internal resistance approx. 250 Ohm), an additional external resistance is not necessary (e.g. VEGA-TRENN 149A, VEGADIS 371, VEGAMET 381/624/625, VEGASCAN 693). In such cases, VEGACONNECT can be connected parallel to the 4 ... 20 mA cable.

5.5 Adjustment with other adjustment programs

PDM

For VEGA PA sensors, device descriptions are also available as EDD for the adjustment program PDM. The device descriptions are already implemented in the current versions of PDM. For old-

er versions of PDM they are available as a free-of-charge download from the Internet.

AMS

For VEGA FF sensors, device descriptions are also available as DD for the adjustment program AMS™. The device 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

<ul style="list-style-type: none"> - Housing - Remote housing - Socket, wall mounting plate remote housing - Seal between housing socket and wall mounting plate - Seal ring between housing and housing cover - Inspection window in housing cover for PLICSCOM - Ground terminal - Connection cable between IP 68 housing and remote electronics - 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 (UL746-C listed) 316Ti/316L PUR, FEP, PE PE hard
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VEGABAR 54, 64

Materials, wetted parts

<ul style="list-style-type: none"> - Process fitting - Diaphragm - Seal <p>Weight</p>	316L, PVDF, PVDF plated, Hastelloy C4 plated sapphire-ceramic [®] (99.9 % oxide ceramic Al ₂ O ₃) Viton, Kalrez 6375, EPDM, Chemraz (only VEGABAR 64) approx. 0.8 ... 8.0 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting
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VEGABAR 65

Materials, non-wetted parts

Isolating liquid

Essomarcil (med. white oil, FDA-approved)

Materials, wetted parts

<ul style="list-style-type: none"> - Process fitting - Process diaphragm - Process seal hygienic fitting with compression nut - Process seal other hygienic fittings <p>Weight</p>	316L Hastelloy C276 FEP-O-Seal EPDM: up to 140 °C (284 °F); Viton: up to 180 °C/200 °C (356 °F/392 °F) approx. 0.8 ... 8.0 kg (1.8 ... 17.6 lbs), depending on the housing material and process fitting
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Output variable

4 ... 20 mA/HART

Output signal Resolution Fault signal Current limitation Load Integration time Response time Fulfilled NAMUR recommendation	4 ... 20 mA/HART 1.6 µA current output unchanged, 20.5 mA, 22 mA, <3.6 mA (adjustable) 22 mA see load diagram under Power supply 0 ... 999 s, adjustable 150 ms (ti: 0 s, 0 ... 100 %) NE 43
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Profibus PA

Output signal - Sensor address Current value Integration time	digital output signal, format acc. to IEEE-754 126 (default setting) constantly 10 mA, ±1 mA 0 ... 999 s, adjustable
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Foundation Fieldbus

Output - Signal - Physical layer Channel Numbers - Channel 1 - Channel 2 - Channel 3 - Channel 4 Current value	digital output signal, Foundation Fieldbus protocol acc. to IEC 61158-2 Primary value Secondary value 1 Secondary Value 2 Temperature Value 10 mA, ±0.5 mA
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Additional output variable, temperature (VEGABAR 54 and 64)

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

Range	-50 ... +150 °C (-58 ... +302 °F)
Resolution	1 °C (1.8 °F)

Input variable

Parameter	Process pressure
Measuring ranges	see product code
Recommended max. turn down	1:30 (no limitation)

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

Reference conditions acc. to DIN EN 61298-1	
– Temperature	18 ... 30 °C (64 ... 86 °F)
– Relative humidity	45 ... 75 %
– Atmospheric pressure	860 ... 1060 mbar/86 ... 106 kPa (12.5 ... 15.4 psi)
Determination of characteristics	limit point adjustment acc. to DIN 16086
Characteristics	Linear
Calibration position	upright, diaphragm points downward
Influence of the installation position	
– VEGABAR 54, 64	<0.2 mbar/20 Pa (0.003 psi)
– VEGABAR 65	<5 mbar/0.5 kPa (0.07 psi)

Deviation in characteristics³⁾

VEGABAR 54

Deviation in characteristics	
– Turn down 1:1	<0.1 %
– Turn down up to 1:5	<0.1 %
– Turn down up to 1:10	<0.15 %

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Deviation in characteristics	
– Turn down 1:1	<0.075 %
– Turn down up to 1:5	<0.075 %
– Turn down up to 1:10	<0.1 %
Accuracy class 0.05 (only with VEGABAR 64 process fitting EV, FT)	
– Turn down 1:1	<0.05 %
– Turn down up to 1:5	<0.05 %
– Turn down up to 1:10	<0.075 %

Influence of the product or ambient temperature

The following values apply to the compensated temperature range 0 ... +100 °C (+212 °F), reference temperature 20 °C (68 °F).

Average temperature coefficient of the zero signal	
– Turn down 1:1	<0.05 %/10 K
– Turn down up to 1:5	<0.1 %/10 K
– Turn down up to 1:10	<0.15 %/10 K

The following values are not within the compensated temperature range.

Average temperature coefficient of the zero signal	
– Turn down 1:1	typ. <0.05 %/10 K

³⁾ Relating to the nominal range, incl. hysteresis and repeatability, determined acc. to the limit point method.

Long-term stability

Long-term drift of the zero signal⁴⁾⁵⁾

VEGABAR 54	<0.1 %/1 year
VEGABAR 64, 65	<0.1 %/2 years

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)

Process conditions

VEGABAR 54

Product temperature depending on the measuring cell seal

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

VEGABAR 64

Product temperature standard version, depending on the meas. cell seal⁶⁾

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

Product temperature, version with extended temperature range, depending on measuring cell seal

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

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Product temperature

- Standard	-12 ... +140 °C (+10.4 ... +284 °F)
- with cooling element	-12 ... +180 °C (+10.4 ... +356 °F)
- with cooling element and screening sheet	-12 ... +200 °C (+10.4 ... +392 °F)

Common data

Vibration resistance

mechanical vibrations with 4 g and 5 ... 100 Hz<ph ctype="bold"><fuss-note></ph>Tested acc. to the regulations of German Lloyd, GL directive 2<ph></fussnote></ph>

VEGABAR 64

Shock resistance

Acceleration 100 g⁷⁾

Electromechanical data - version IP 66/IP 67

Cable entry/plug⁸⁾

- Single chamber housing	<ul style="list-style-type: none"> ● 1x cable entry M20x1.5 (cable-ø 5 ... 9 mm), 1x blind stopper M20x1.5 or: <ul style="list-style-type: none"> ● 1x closing cap ½ NPT, 1x blind plug ½ NPT or: <ul style="list-style-type: none"> ● 1x plug (depending on the version), 1x blind plug M20x1.5
- Double chamber housing	<ul style="list-style-type: none"> ● 1x cable entry M20x1.5 (cable-ø 5 ... 9 mm), 1x blind stopper M20x1.5; plug M12x1 for VEGADIS 61 (optional)

⁴⁾ Similar to DIN 16086, DINV 19259-1 and IEC 60770-1.

⁵⁾ Acc. to IEC 60770-1, relating to the nominal measuring range.

⁶⁾ With process fitting PVDF, max. 100 °C (212 °F).

⁷⁾ Tested acc. to EN 60068-2-27

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

Spring-loaded terminals

or:

- 1x closing cap ½ NPT, 1x blind stopper ½ NPT, plug M12x1 for VEGADIS 61 (optional)

or:

- 1x plug (depending on the version), 1x blind stopper M20x1.5; plug M12x1 for VEGADIS 61 (optional)

for wire cross sections up to 2.5 mm²

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

Version IP 66/IP 68, 1 bar is only available for instruments with absolute pressure measuring ranges.

Cable gland

- Single chamber housing

- 1x IP 68 cable entry M20x1.5; 1x blind stopper M20x1.5

or:

- 1x closing cap ½ NPT, 1x blind plug ½ NPT

- Double chamber housing

- 1x IP 68 cable entry M20x1.5; 1x blind stopper M20x1.5; plug M12x1 for VEGADIS 61 (option)

or:

- 1x closing cap ½ NPT, 1x blind stopper ½ NPT, plug M12x1 for VEGADIS 61 (optional)

Connection cable

- Configuration

four cores, one suspension cable, one breather capillary, screen braiding, foil, mantle

- wire cross section

0.5 mm²

- wire resistance

<0.036 Ohm/m

- tensile load

>1200 N (270 pounds force)

- Standard length

5 m (16.4 ft)

- Max. length

1000 m (3280 ft)

- Min. bending radius

25 mm (with 25 °C/77 °F)

- Diameter

approx. 8 mm

- Colour - standard PE

Black

- Colour - standard PUR

Blue

- Colour - Ex version

Blue

Electromechanical data - version IP 68

Cable entry/plug⁹⁾

- Remote housing

- 1x cable entry M20x1.5 (cable-ø 5 ... 9 mm), 1x blind stopper M20x1.5

or:

- 1x closing cap ½ NPT, 1x blind plug ½ NPT

or:

- 1x plug (depending on the version), 1x blind plug M20x1.5

Spring-loaded terminals

for wire cross sections up to 2.5 mm²

Connection cable between IP 68 instrument and remote housing:

- Configuration

four cores, one suspension cable, one breather capillary, screen braiding, foil, mantle

- wire cross section

0.5 mm²

- wire resistance

<0.036 Ohm/m

- Standard length

5 m (16.4 ft)

- Max. length

180 m (591 ft)

- Min. bending radius

25 mm (with 25 °C/77 °F)

- Diameter

approx. 8 mm

- Colour - standard PE

Black

- Colour - standard PUR

Blue

- Colour - Ex version

Blue

⁹⁾ Depending on the version M12x1, acc. to DIN 43650, Harting, Amphenol-Tuchel, 7/8" FF

Indicating and adjustment module

Power supply and data transmission	through sensor via gold-plated sliding contacts (I ² C bus)
Display	LC display in full 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

Supply voltage	
– non-Ex instrument	12 ... 36 V DC
– EEx ia instrument	12 ... 30 V DC
– Exd instrument	18 ... 36 V DC
Supply voltage with lighted indicating and adjustment module ¹⁰⁾	
– non-Ex instrument	22.5 ... 36 V DC
– EEx ia instrument	22.5 ... 30 V DC
– EExd ia instrument	22.5 ... 36 V DC
Permissible residual ripple	
– <100 Hz	U _{ss} <1 V
– 100 Hz ... 10 kHz	U _{ss} <10 mV
Load	see diagram

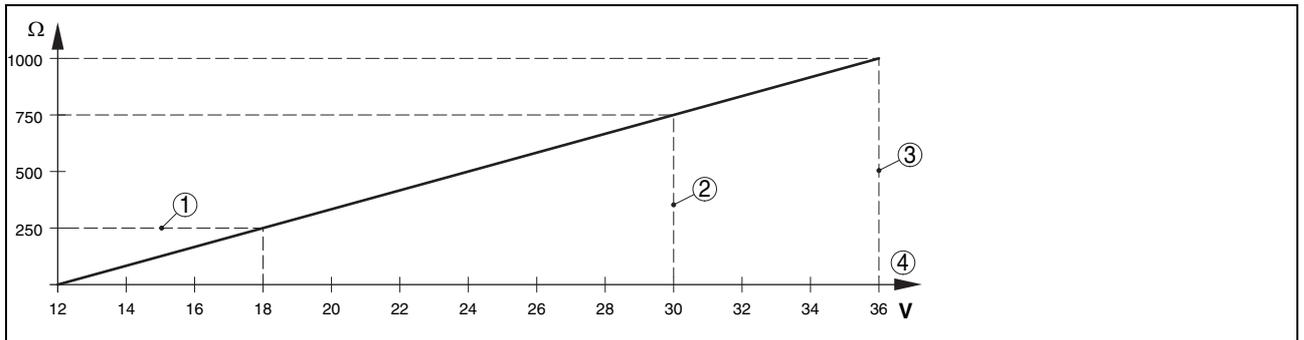


Fig. 19: Voltage diagram

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

Power supply - Profibus PA

Supply voltage	
– non-Ex instrument	9 ... 32 V DC
– EEx ia instrument	9 ... 24 V DC
Supply voltage with lighted indicating and adjustment module ¹¹⁾	
– non-Ex instrument	12 ... 36 V DC
– EEx ia instrument	12 ... 30 V DC
Power supply by/max. number of sensors	
– DP/PA segment coupler	max. 32 (max. 10 with Ex)
– VEGALOG 571 EP card	max. 15 (max. 10 with Ex)

¹⁰⁾ This function is for instruments with StEx, WHG or ship approval as well as country-specific approvals such as those acc. to FM or CSA, available at a later date.
¹¹⁾ This function is for instruments with StEx, WHG or ship approval as well as country-specific approvals such as those acc. to FM or CSA, available at a later date.

Power supply - Foundation Fieldbus

Supply voltage	
– non-Ex instrument	9 ... 32 V DC
– EEx ia instrument	9 ... 24 V DC
Supply voltage with lighted indicating and adjustment module ¹²⁾	
– non-Ex instrument	12 ... 32 V DC
– EEx ia instrument	12 ... 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 ¹³⁾
– Alu and stainless housing, optionally available	IP66/IP 68 (1 bar) ¹⁴⁾
– Transmitter in IP 68 version	IP 68
– Remote housing	IP 65
Overvoltage category	III
Protection class	II

Available approvals or approvals applied for¹⁵⁾¹⁶⁾

ATEX ia	ATEX II 1G, 1/2G, 2G EEx ia IIC T6
ATEX ia and d	ATEX II 1/2G, 2G EEx d ia IIC T6
ATEX D	ATEX II 1/2D, 2D IP6X T
IEC	IEC Ex ia IIC T6
FM	FM, Cl.I, Div2 (NI)+II.II, II, Div1 (DIP), FM Cl.I-III, Div 1 (IS), FM Cl.I-III, Div 1 (IS)+Cl.I-III, Div1 Gr.C-G(XP)
Ship approval	GL, LRS, ABS, CCS, RINA, DNV
Others	WHG

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 will find detailed information in the "Supplementary instructions manual - Functional safety VEGABAR series 50 and 60" or under www.vega.com.

Functional safety acc. to IEC 61508-4	
– Single channel architecture (1oo1 D)	up to SIL2
– Double channel architecture (1oo2 D)	up to SIL3

Environmental instructions

VEGA environment management system ¹⁷⁾	certified acc. to DIN EN ISO 14001
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¹²⁾ This function is for instruments with StEx, WHG or ship approval as well as country-specific approvals such as those acc. to FM or CSA, available at a later date.

¹³⁾ 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.

¹⁴⁾ Only with instruments with absolute pressure ranges.

¹⁵⁾ Deviating data in Ex applications: see separate safety instructions.

¹⁶⁾ Depending on order specification.

¹⁷⁾ You can find detailed information under www.vega.com.

7 Dimensions

Housing in protection IP 66/IP 67

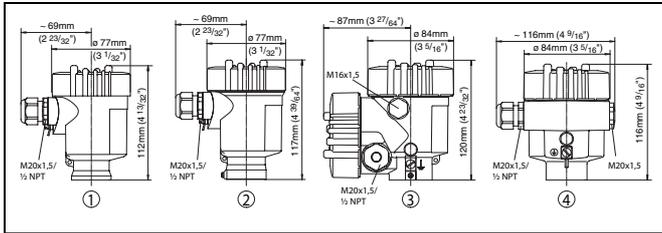


Fig. 20: Housing versions in protection IP 66/IP 67 (with integrated PLICSCOM, the housing is 9 mm/0.35 in higher)

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

Housing in protection IP 66/IP 68, 1 bar

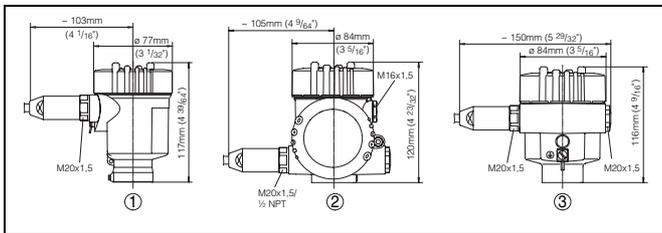


Fig. 21: Housing versions in protection IP 66/IP 68, 1 bar (with integrated PLICSCOM the housing is 9 mm/0.35 in higher)

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

IP 68 version - with remote housing

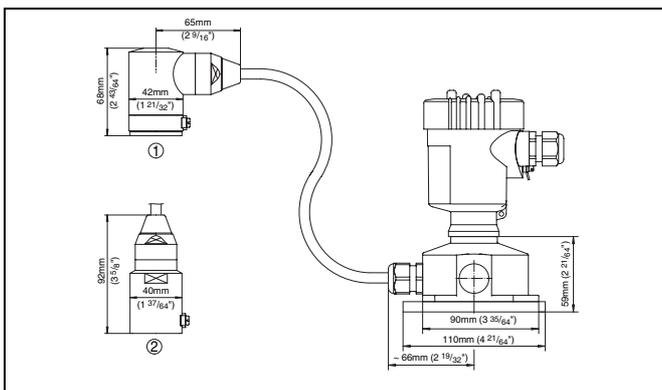


Fig. 22: Transmitter and remote housing with IP 68 version

- 1 Lateral cable outlet
- 2 Axial cable outlet

VEGABAR 54, threaded fitting

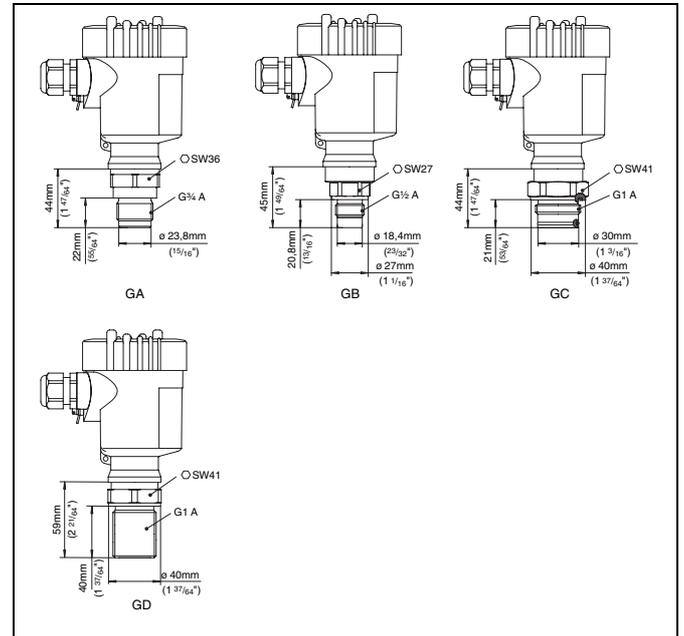


Fig. 23: VEGABAR 54, threaded fitting

- GA G $\frac{1}{2}$ A flush
 GB G $\frac{3}{4}$ A completely flush
 GC G 1 A completely flush
 GD G 1 A completely flush 40 mm

VEGABAR 54, flange fitting

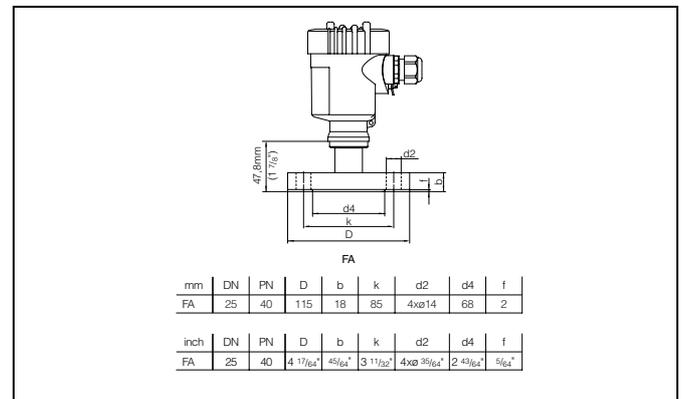


Fig. 24: VEGABAR, flange connection form B1, EN 1092-1

VEGABAR 54, fitting for paper industry

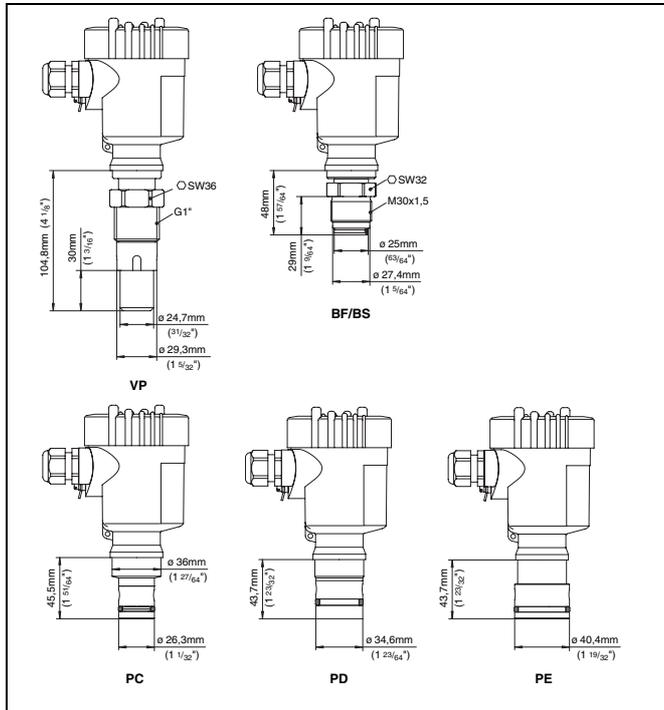


Fig. 25: VEGABAR 54, fitting for paper industry

- VP G1" PASVE
- BF M30x1.5
- BS M30x1.5 for headbox
- PC PMC 1"
- PD PMC 1 1/4"
- PE PMC 12"

VEGABAR 64, threaded and hygienic fitting - part 1

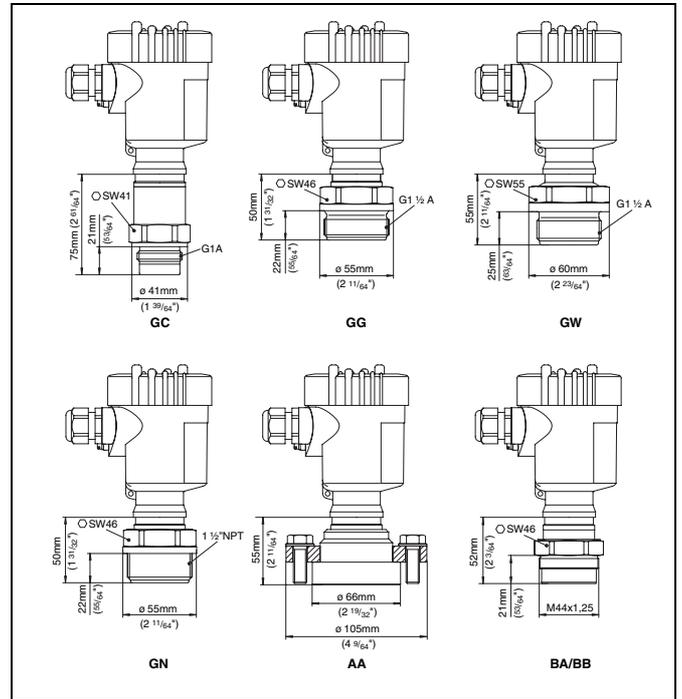


Fig. 26: VEGABAR 64, threaded and aseptic fitting

- GC G1 A
- GG G1 1/2 A
- GW G1 1/2 A, PVDF
- GN 1 1/2 NPT
- AA DRD
- BA M44x1.25

VEGABAR 64, threaded and hygienic fitting - part 2

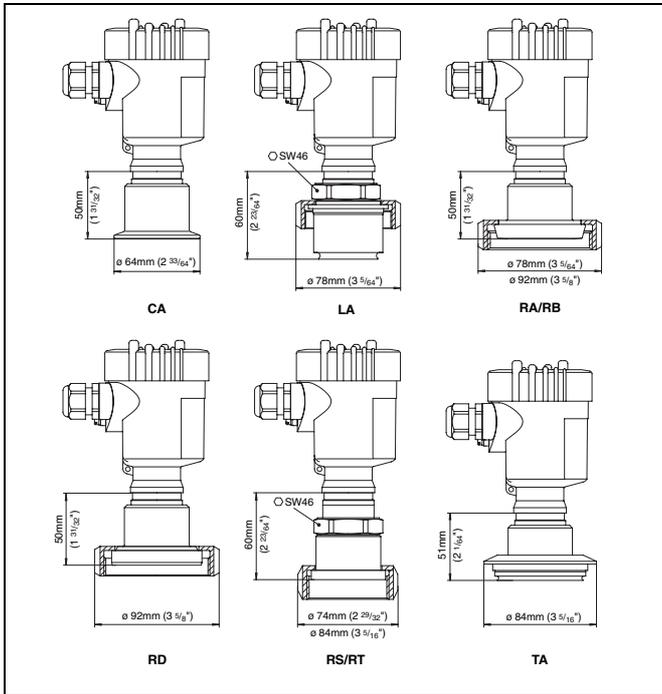


Fig. 27: VEGABAR 64, threaded and aseptic fitting

- CA Tri-Clamp 2"
- LA hygienic fitting with compression nut
- RA bolting DN 40, DN 50
- RD bolting DN 50 form A
- RS SMS DN 38/DN 51
- TA Tuchenhagen Varivent DN32

VEGABAR 64, flange fitting

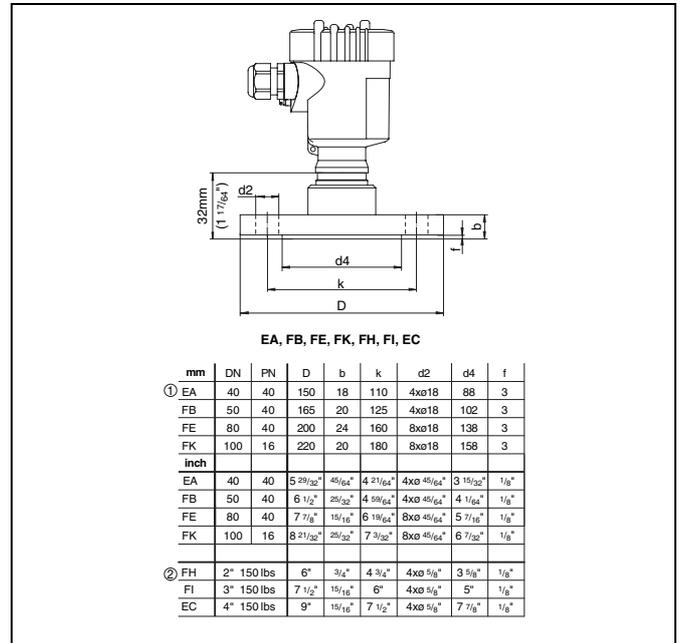


Fig. 28: VEGABAR, flange connection

- 1 Flange connection acc. to DIN 2501
- 2 Flange fitting acc. to ANSI B16.5
- 3 Flange with extension
- 4 Order-specific

VEGABAR 64, threaded fitting for paper industry

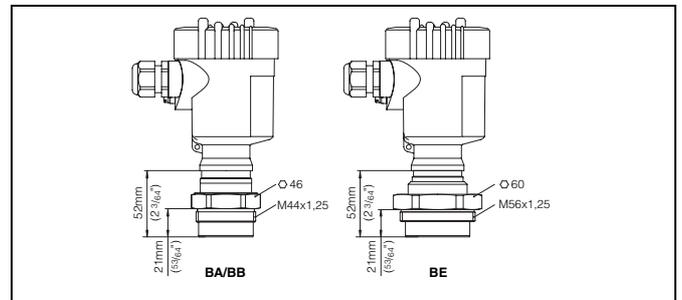


Fig. 29: VEGABAR 64, threaded fitting for paper industry

- BA M44x1.25
- BE M56x1.25

VEGABAR 64, extension fitting for paper industry

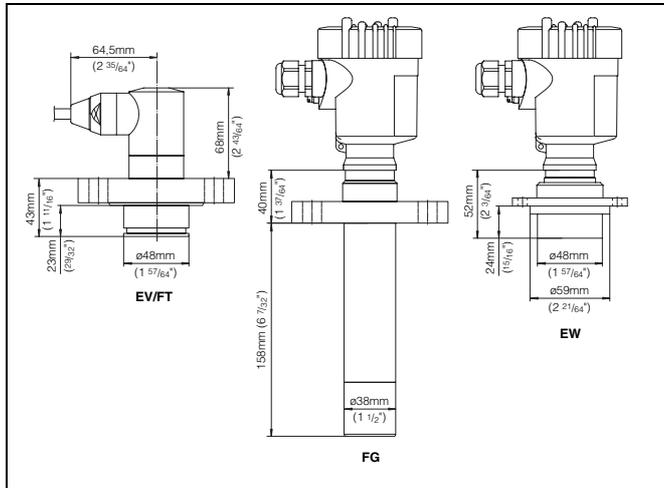


Fig. 30: VEGABAR, extension fitting for paper industry

- EV completely flush for head box 2-times flattened/standard
- FG Extension for ball valve fitting
- EW Extension for manometer orifice

VEGABAR 65, threaded and hygienic fitting - part 2

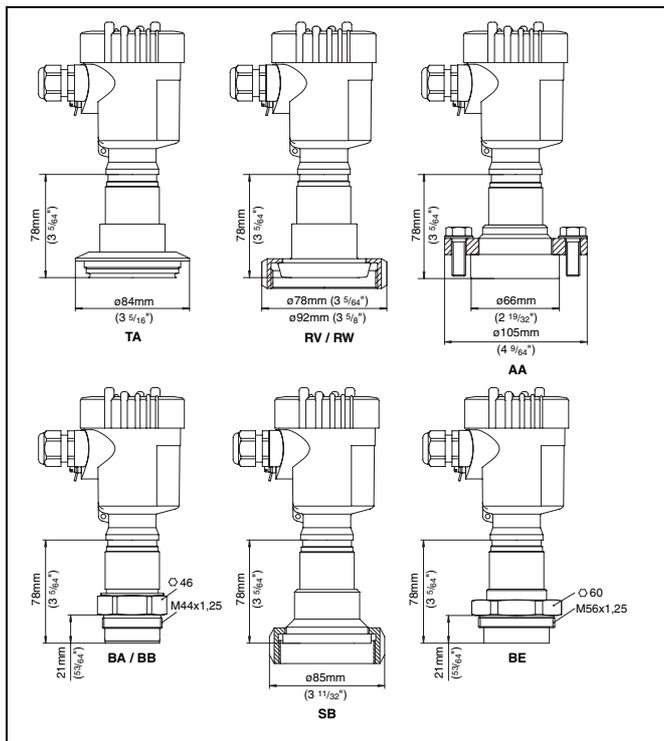


Fig. 31: VEGABAR 65, threaded and hygienic fitting - part 2

- TA Tuchenhagen Varivent DN 32
- RV Bolting DN 40 DIN 11851
- RW bolting DN 50 DIN 11851
- AA DRD
- BA M44x1.25
- SB MS DN 51
- BE M56x1.25

VEGABAR 65, flange fitting

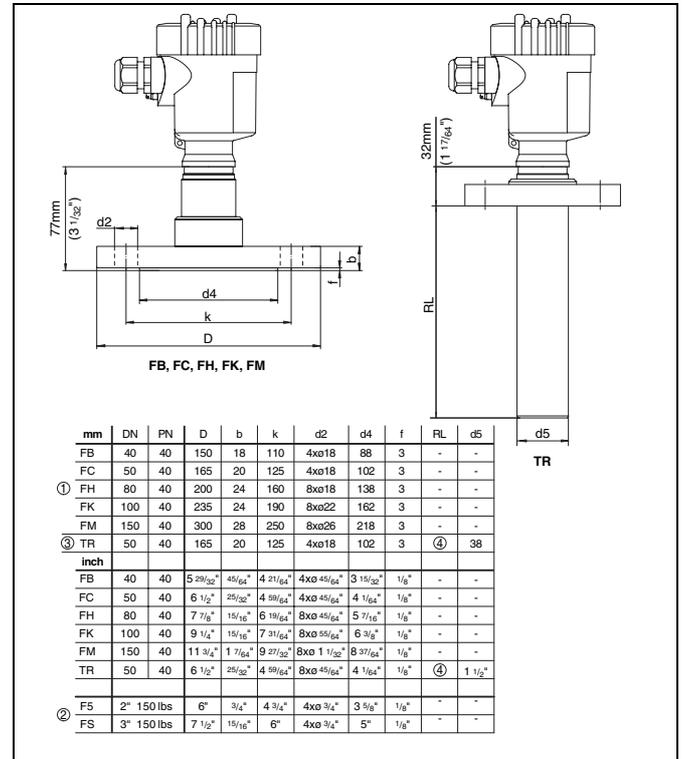


Fig. 32: VEGABAR 65, flange fitting

- 1 Flange connection acc. to DIN 2501
- 2 Flange fitting acc. to ANSI B16.5
- 3 Flange with extension
- 4 Order-specific

VEGABAR 65, flange fitting

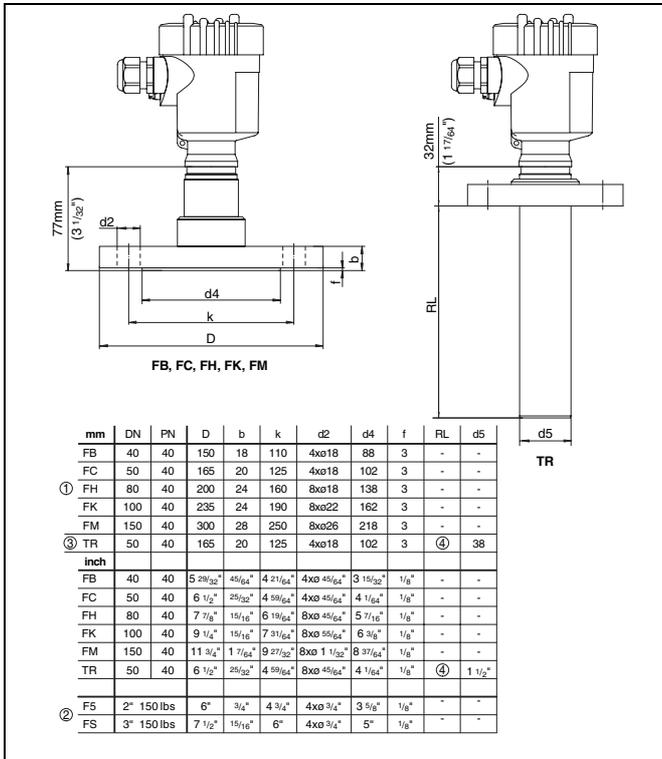


Fig. 33: VEGABAR 65, flange fitting

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



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You can find at www.vega.com downloads of the following

- operating instructions manuals
- menu schematics
- software
- certificates
- approvals

and much, much more

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