Level measurement
of bulk solids

Guided microwave

VEGAFLEX 61
VEGAFLEX 62
VEGAFLEX 66

Product Information

VEGA

Contents

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.

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1 Description of the measuring principle

Measuring principle

High frequency microwave impulses are guided along a steel cable or rod. When they reach the product surface, the microwave pulses are reflected and received by the processing electronics. The running time is processed by the instrument.

A microprocessor identifies these level echoes, which are subsequently measured by the ECHOFOX software, evaluated and converted into level information.

Time-consuming adjustment with medium is not necessary. The instruments are preset to the ordered probe length. The shortenable cable and rod versions can be adapted individually to the local requirements.

Insensitive to dust

Even process conditions such as intense dust generation do not influence the accuracy of the measurement.

Unaffected by material fluctuations

Density fluctuations or changes of the dielectric constant do not influence the accuracy.

Buildup: no problem

Buildup or condensation on the probe or vessel wall do not influence the measuring result.

Wide application range

With measuring ranges up to 60 m (197 ft), the sensors are well suited for tall vessels. Temperatures up to 150 °C (302 °F) and pressures from vacuum up to 40 bar (580 psi) ensure a wide application range.

VEGAFLEX 66 is particularly suitable for the measurement of liquids with high process temperatures. Its mechanical configuration was specially optimised for such applications. With these high temperature versions, process temperatures from -200° to +400° C (-328 … +752 °F) and pressures up to 400 bar (5800 psi) are possible.

Insensitive to noise

VEGAFLEX sensors are insensitive to filling noise.

1.1 Application examples

Foodstuffs and animal feed

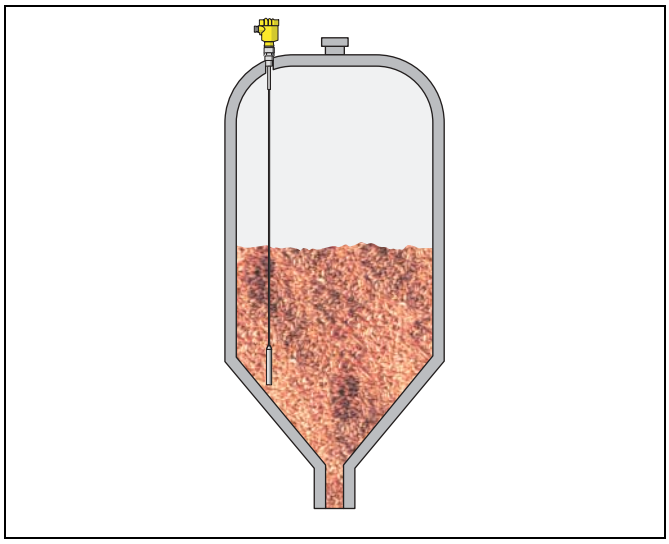

Fig. 1: Level measurement in a grain silo with VEGAFLEX 61

Cereals, sugar, flour, coffee, cornflakes, cacao, instant powder, animal feed - bulk solid levels must be measured everywhere in the food industry.

The guided microwave principle works independent of product characteristics such as moisture, intense dust or noise generation and the shape of the material cone.

Even very tall silos are no problem. Cable probes, also with PA coating, are available for different loads and in lengths up to 60 m (197 ft).

VEGAFLEX meets also the requirements of dust-Ex zone 20 (1/2 D).

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Plastics

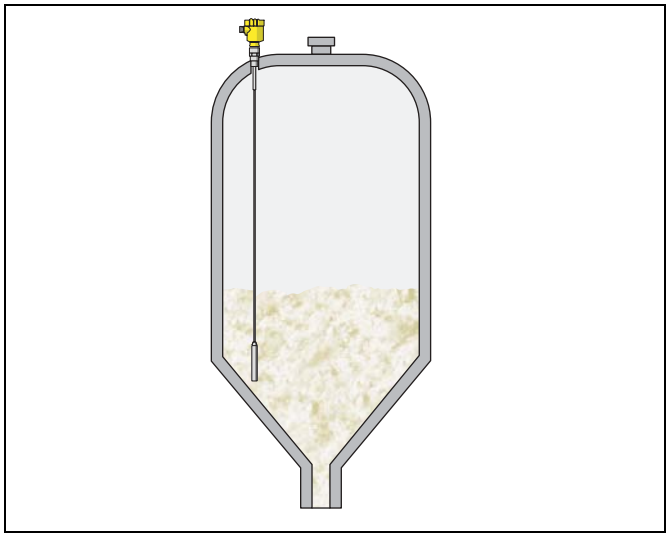

Fig. 2: Level measurement of plastic granules with VEGAFLEX 61

Many finished products in the chemical industry are produced as powder, granules or pellets. The different and sometimes fluctuating product characteristics place heavy demands on the level measurement.

The measuring result is influenced neither by fluctuating product quality nor by dust generation or the shape of the material cone.

Even strong electrostatic discharges cannot harm VEGAFLEX 61.

Unaffected by product properties, the sensor delivers accurate, reproducible level data.

Building materials

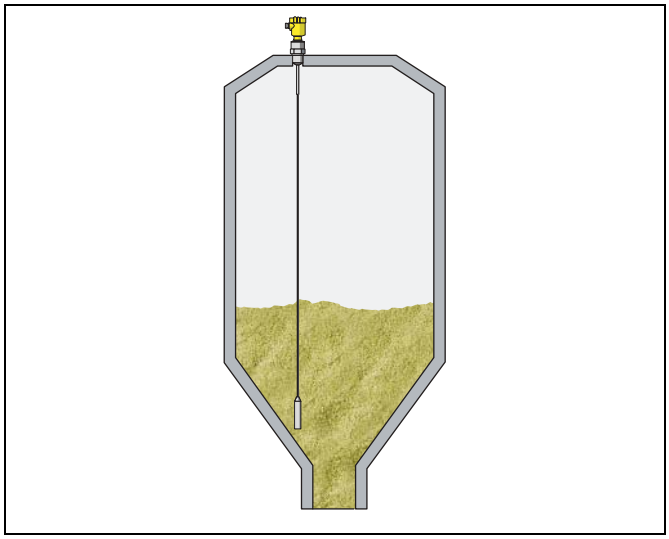

Fig. 3: Level measurement in a storage vessel with VEGAFLEX 62

In the building industry, different additives are stored in single or multiple chamber silos - e.g. cement, sand, filler with varying properties such as moisture content, grain size, material cone shape and flow behavior.

The guided microwave is ideal for level measurement in vessels containing bulk solids. Due to the physical measuring principle, adjustment with medium is no longer necessary. The sensor only has to be electrically connected.

The measuring result is influenced neither by fluctuating product quality nor by dust generation, condensation or the shape of the material cone and therefore has a high reproducibility.

Cable probes are available for different lengths and loads. Tractive forces up to 3 tons on the cable are no problem for the robust VEGAFLEX 62.

The measurement is unaffected by product properties such as density, temperature, dielectric value and buildup. Because it is available in a wide range of versions, VEGAFLEX can also measure products such as e.g. light-weight fly ash or hot asphalt.

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2 Type overview

	VEGAFLEX 61 with cable measuring probe	VEGAFLEX 61 with rod measuring probe
		
Application:	Solids	Solids
Measuring range:	0.15 … 32 m (0.5 … 105 ft)	0.15 … 4 m (0.5 … 13 ft)
Process fitting:	Thread, flange	Thread, flange
Material:	316L and PCTFE, 316	316L and PCTFE, Hastelloy C22 (2.4602)
Process temperature:	-40 … +150 °C (-40 … +302 °F)	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … 40 bar/-100 … 4000 kPa (-14.5 … 580 psi)	-1 … 40 bar/-100 … 4000 kPa (-14.5 … 580 psi)
Signal output:	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus

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	VEGAFLEX 62 with cable measuring probe	VEGAFLEX 62 with rod measuring probe
		
Application:	Solids	Solids
Measuring range:	0.15 … 60 m (0.5 … 197 ft)	0.15 … 4 m (0.5 … 13 ft)
Process fitting:	Thread, flange	Thread, flange
Material:	316L and PCTFE, 316	316L and PCTFE, Hastelloy C22 (2.4602)
Process temperature:	-40 … +150 °C (-40 … +302 °F)	-40 … +150 °C (-40 … +302 °F)
Process pressure:	-1 … 40 bar/-100 … 4000 kPa (-14.5 … 580 psi)	-1 … 40 bar/-100 … 4000 kPa (-14.5 … 580 psi)
Signal output:	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus

	VEGAFLEX 66 with cable measuring probe	VEGAFLEX 66 with rod measuring probe
		
Application:	Liquids	Liquids
Measuring range:	1 … 32 m (3.3 … 105 ft)	0.5 … 6 m (1.6 … 20 ft)
Process fitting:	Thread, flange	Thread, flange
Material:	316L and PEEK GF30, 316	316L and PEEK GF30, Hastelloy C22 (2.4602)
Process temperature:	-200 … +400 °C (-328 … +752 °F)	-200 … +400 °C (-328 … +752 °F)
Process pressure:	-1 … 400 bar/-100 … 40000 kPa (-14.5 … 5800 psi)	-1 … 400 bar/-100 … 40000 kPa (-14.5 … 5800 psi)
Signal output:	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus	4 … 20 mA/HART in two-wire, four-wire technology, Profibus PA, Foundation Fieldbus

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Indicating and adjustment module

PLICSCOM

Housing

Plastic

Stainless steel

Aluminium

Aluminium (double chamber)

Electronics

4 … 20 mA/ HART two-wire

4 … 20 mA/ HART four-wire

Profibus PA

Foundation Fieldbus

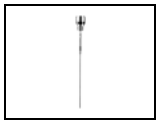
Process fitting

Thread

Flanges

Sensors

Cable probe



Rod probe

Approvals

Dust explosion protection

SIL

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3 Mounting information

Measuring range
The reference plane for the measuring range of the sensors is the seal surface of the thread or flange.

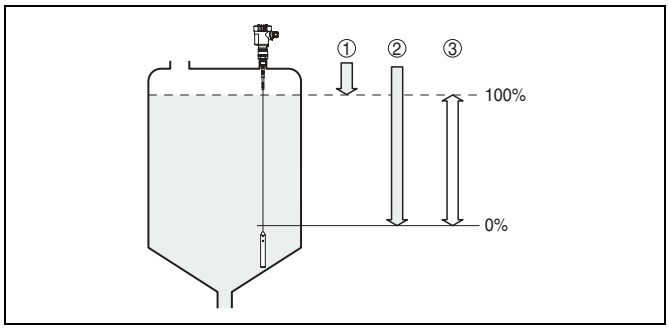

Fig. 4: Measuring range (operating range) and max. measuring distance

1 full
2 empty (max. measuring distance)
3 Measuring range

Make sure that a min. distance is maintained below the reference plane and if necessary at the probe end, where measurement is not possible (dead band). Keep in mind that the cable length cannot be used down to the end because measurement around the gravity weight is not possible. These min. distances (dead band areas) are specified in the "*Technical data*" in the "*Supplement*".

Installation position
Mount VEGAFLEX so that the probe does not touch any installations or the vessel wall during operation. If necessary, fasten the probe end.

Mount the cable and rod versions of VEGAFLEX in such a way that the distance to vessel installations or the vessel wall is at least 300 mm (12 in).

If possible, mount the sensor flush with the vessel top. If this is not possible, use short sockets with small diameter.

In case of unfavourable mounting conditions such as e.g. very high (h >200 mm/8 in) or very wide (ø >200 mm/8 in) sockets or a too small distance to the vessel wall or vessel installations (<300 mm/12 in), we recommend carrying out an empty vessel profile for the area in question. Use the adjustment software PACTware™ with DTM.

Inflowing material
Make sure that the probe is not subjected to strong lateral forces. Mount VEGAFLEX at a position in the vessel where no disturbances, e.g. from filling openings, agitators, etc., can occur.

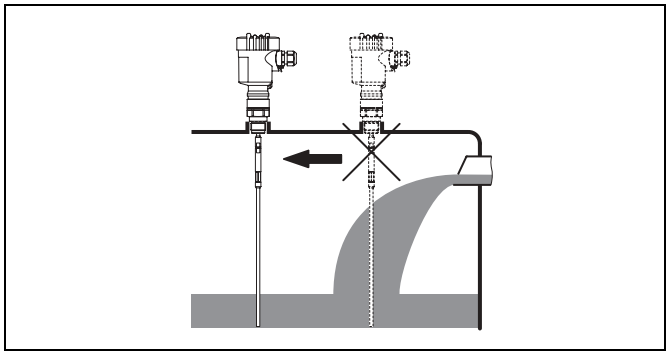

Fig. 5: Lateral load

Vessel type

Plastic vessel

The guided microwave principle requires a metal surface on the process fitting. Therefore use in plastic vessels etc. an instrument version with flange (from DN 50) or place a metal sheet (ø >200 mm/8 in) beneath the process fitting when screwing it in.

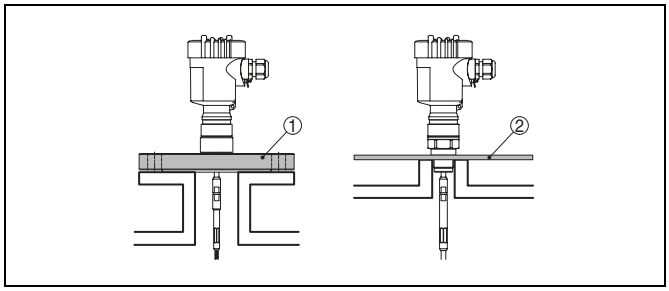

Fig. 6: Installation in plastic silo

1 Flanges
2 Metal sheet

Concrete vessel

When installed in thick concrete ceilings, VEGAFLEX should be mounted front flush to the lower edge. In concrete silos, the distance to the wall should be at least 500 mm (20 in).

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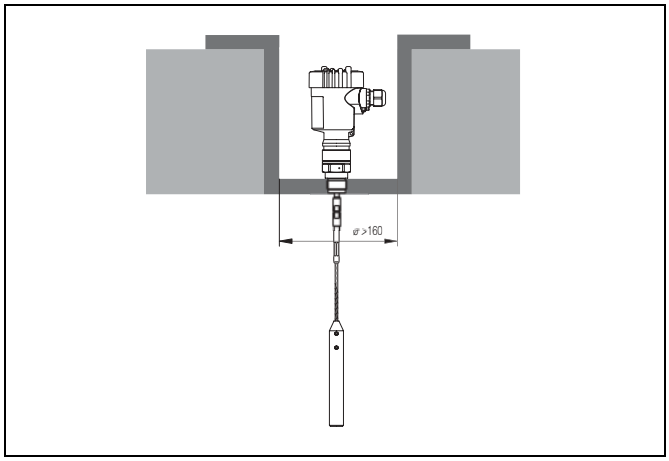

Fig. 7: Installation in concrete silos

Fasten

If the probe can touch the vessel wall during operation due to product movements or agitators etc., the measuring probe should be fixed securely.

There is a thread (M12) in the gravity weight, e.g. for a lug (article no. 2.27423).

Make sure that the probe cable is not extremely taut. Avoid tensile loads on the cable. Use a slightly pre-stressed tension spring to fasten the cable.

Avoid undetermined cable-vessel-connections, i.e. the connection must be either grounded or isolated reliably. Any deviation from this requirement will cause measurement errors.

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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

4 … 20 mA/HART two-wire
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.

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

4 … 20 mA/HART four-wire
Power supply and current output are carried on two separate connection cables.

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

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

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

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. VEGAFLEX is connected respectively with screened cable acc. to the bus specification. Make sure that the bus is terminated via appropriate terminating resistors.

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

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

4.4 Connection of the cable screen and grounding

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

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

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

4.5 Wiring plans

Single chamber housing

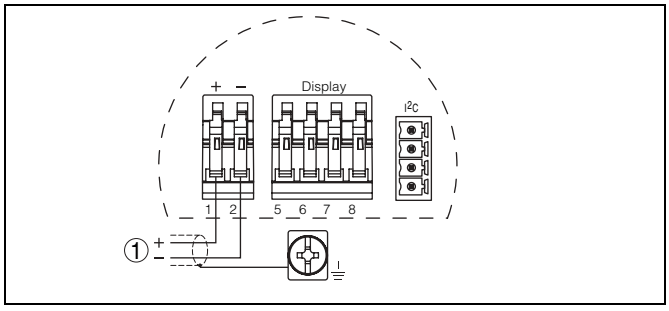

Fig. 8: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Power supply and signal output

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Double chamber housing - two-wire

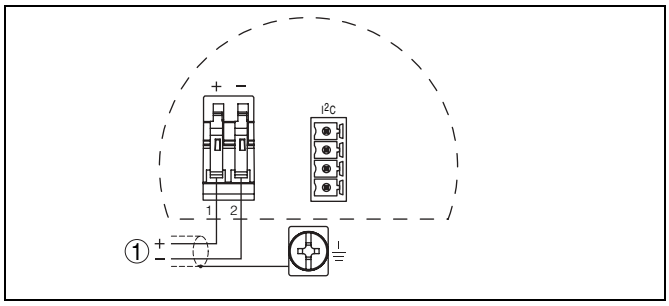

Fig. 9: Connection HART two-wire, Profibus PA, Foundation Fieldbus

1 Power supply and signal output

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

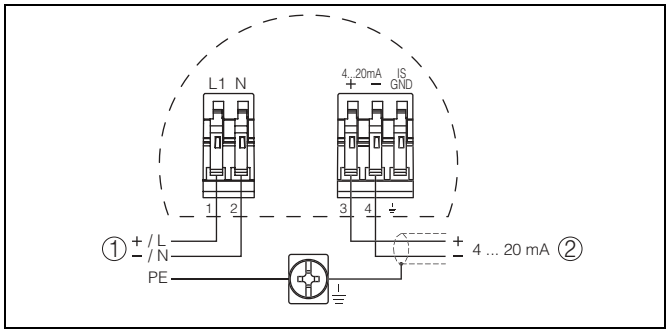

Fig. 10: Connection 4 … 20 mA/HART four-wire

1 Voltage supply
2 Signal output

5 Adjustment

5.1 Overview

VEGAFLEX 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 VEGAFLEX, optionally also in PLICSCOM or in the adjustment program.

5.2 Compatibility acc. to NAMUR NE 53

VEGAFLEX meet NAMUR recommendation NE 53. VEGA instruments are generally upward and downward compatible:
- Sensor software for DTM VEGAFLEX HART, PA or FF
- DTM VEGAFLEX 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.[1)]

PLICSCOM adjustment

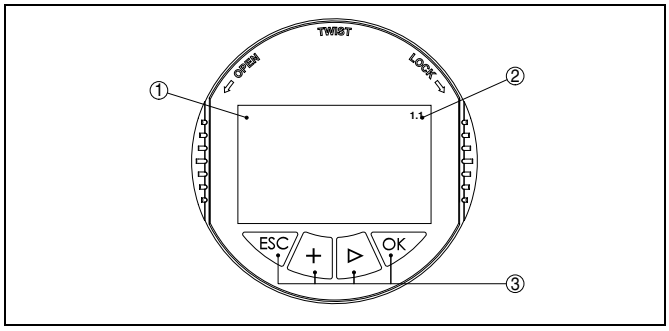

Fig. 11: Indicating and adjustment elements

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 signal output 4 … 20 mA/HART, Profibus PA or Foundation Fieldbus, the VEGAFLEX sensors can be operated directly on the instrument via PACTware™. An instrument driver for the respective VEGAFLEX is necessary for the adjustment with PACTware™. All currently available VEGA DTMs are composed 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. PACTware™ can be downloaded free-of-charge in the basic version via 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.

Connecting the PC directly to the sensor

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1) 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.

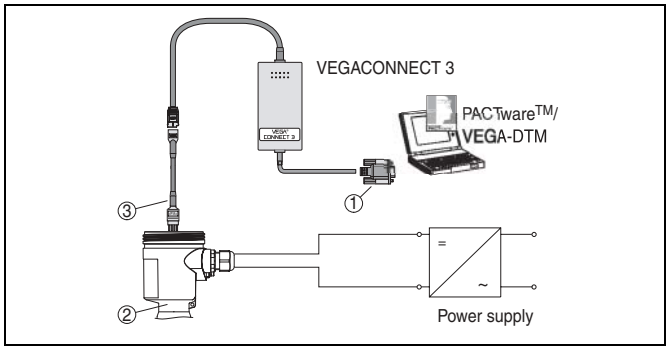

Fig. 12: PC connected directly to the sensor

1 RS232 connection
2 VEGAFLEX
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 necessary in addition to the PC and the suitable VEGA-DTM.

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

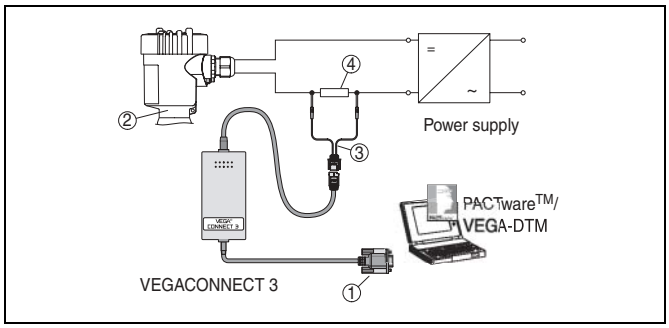

Fig. 13: Connecting the PC to the signal cable

1 RS232 connection
2 VEGAFLEX
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. This applies, e.g. to the VEGA instruments VEGATRENN 149A, VEGADIS 371, VEGAMET 381. Also standard Ex separators are most of the time equipped with a sufficiently high current limitation resistor. In such cases, VEGACONNECT 3 can be connected in parallel to the 4 … 20 mA cable.

Connecting the PC to the signal cable (4 … 20 mA/HART four-wire)

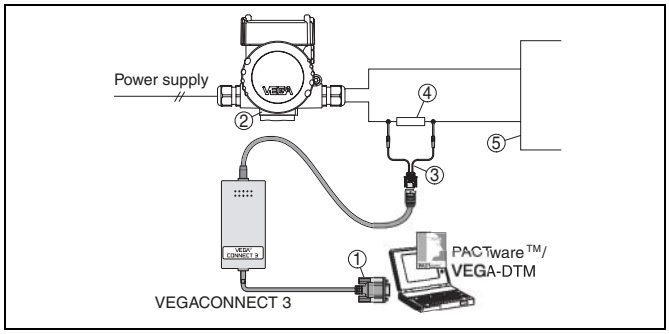

Fig. 14: Connecting the PC to the signal cable

1 RS232 connection
2 VEGAFLEX
3 HART adapter cable for VEGACONNECT 3
4 HART resistance 250 Ohm
5 4 … 20 mA processing

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

6 Technical data

General data

Material 316L corresponds to 1.4404 or 1.4435; 316 corresponds to 1.4401

VEGAFLEX 61

Materials, wetted parts	
– Process fitting	316L and PCTFE, Hastelloy C22 (2.4602) and PCTFE
– Process seal	Viton, Kalrez 6375 and EPDM (with instruments with thread: Klingersil C-4400)
– inner conductor (up to the separation cable/rod)	1.4462
– Rod ø 6 mm (0.24 in)	316L, Hastelloy C22 (2.4602)
– Cable ø 4 mm (0.16 in) with gravity weight	316

VEGAFLEX 62

Process fitting - cable version	316L and PTFE
Process fitting - rod version	316L and PCTFE, Hastelloy C22 (2.4602) and PTFE
Process seal	Viton, Kalrez 6375, EPDM, Viton FEP-coated (instruments with thread: Klingersil C-4400)
Cable ø 6 mm (0.24 in)	316
Rod ø 16 mm (0.63 in)	316L, Hastelloy C22 (2.4602)

VEGAFLEX 66

Materials, wetted parts - version -200 … +400 °C (-328 … +752 °F)	
– Process fitting - rod version	316L, Hastelloy C22 (2.4602) and Aluminium oxide ceramic 99.7 % (Al_2O_3)
– Process fitting - cable version	316L, Hastelloy C22 (2.4602) and Aluminium oxide ceramic 99.7 % (Al_2O_3)
– Rod ø 16 mm (0.63 in)	316L
– Cable ø 6 mm (0.24 in)	316
– Process seal	graphite

Seal material

Seal	
– Cable and rod version	Viton, Kalrez 6375, EPDM, Viton FEP-coated

Materials, non-wetted parts

Materials, non-wetted parts	
– Housing	plastic PBT (Polyester), Alu-die casting powder-coated, 316L
– Seal between housing and housing cover	NBR (stainless steel housing), silicone (Alu/plastic housing)
– Inspection window in housing cover for PLICSCOM (optional)	Polycarbonate
– Ground terminal	316L

Weights

Weights	
– Plastic housing	760 g (27 oz)
– Aluminium housing	1170 g (41 oz)
– Aluminium double chamber housing	1470 g (52 oz)
– Stainless steel housing	1530 g (54 oz)
– Cable ø 4 mm (0.16 in)	approx. 80 g/m (0.86 oz/ft)
– Cable ø 6 mm (0.24 in)	approx. 170 g/m (1.8 oz/ft)
– Rod ø 6 mm (0.24 in)	approx. 220 g/m (2.4 oz/ft)
– Rod ø 16 mm (0.63 in)	approx. 1600 g/m (17.2 oz/ft)
– Gravity weight (with cable version ø 4 mm (0.16 in)	approx. 325 g (11.5 oz)
– Gravity weight (with cable version ø 6 mm (0.24 in)	approx. 730 g (26 oz)

Lengths

Lengths (L)	
– Cable ø 4 mm (0.16 in)	1 … 32 m (3.3 … 105 ft)
– Cable ø 6 mm (0.24 in)	1 … 60 m (3.3 … 197 ft)
– Rod ø 6 mm (0.24 in)	0.3 … 4 m (1 … 13 ft)
– Rod ø 16 mm (0.63 in)	0.3 … 4 m (1 … 13 ft)

Lateral load

Lateral load	
– Rod ø 6 mm (0.24 in)	4 Nm (3 lbf ft)
– Rod ø 16 mm (0.63 in)	30 Nm (22 lbf ft)

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Max. tensile load

Max. tensile load	
– VEGAFLEX 61, cable ø 4 mm (0.16 in)	5 KN (1124 lbf)
– VEGAFLEX 62, cable ø 6 mm (0.24 in)	30 KN (6745 lbf)
– VEGAFLEX 66, cable ø 4 mm (0.16 in)	2.5 KN (562 lbf)

Output variable

4 … 20 mA/HART

Output signal	4 … 20 mA/HART
Resolution	1.6 µA
Fault signal	current output unchanged, 20.5 mA, 22 mA, <3.6 mA (adjustable)
Current limitation	22 mA
Load	
– Two-wire instrument - 4 … 20 mA/HART	see load diagram in Power supply
– Four-wire instrument - 4 … 20 mA/HART	max. 500 Ohm[2)]
Integration time (63 % of the input variable)	0 … 999 s, adjustable
Fulfilled NAMUR recommendation	NE 43

Profibus PA

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

Foundation Fieldbus

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

Input variable

Parameter	Level of solids

Cable and rod version

min. dielectric figure - rod, cable version	Er >1.6
Dead zone - rod version (ø 6 mm/0.24 in, ø 16 mm/0.63 in)	
– top	80 mm (3.1 in)
– bottom	-
Dead zone - cable version (ø 4 mm/0.16 in, ø 6 mm/0.24 in)	
– top	150 mm (5.9 in)
– bottom	250 mm (9.8 in) (gravity weight +100 mm)

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[2)] With inductive load, ohmic share at least 25 Ohm/mH.

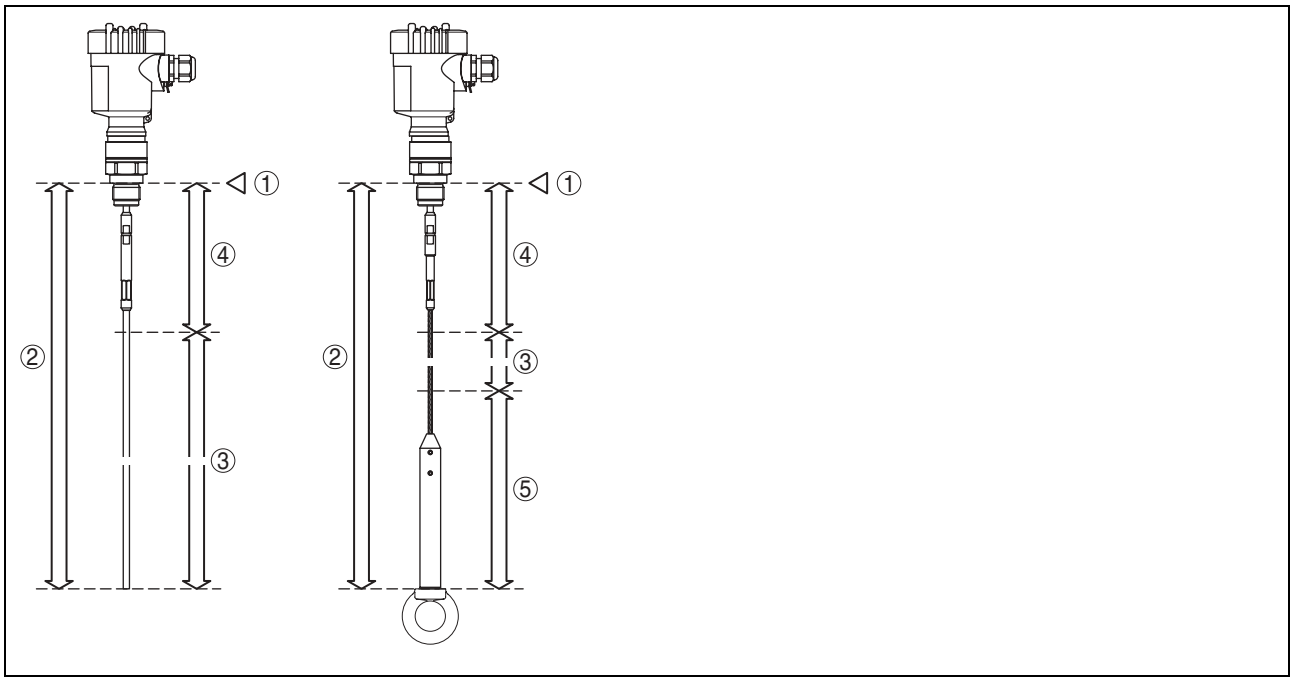

Fig. 15: Measuring ranges of VEGAFLEX - cable and rod version e.g. VEGAFLEX 61

1 Reference plane
2 Probe length
3 Measuring range
4 Upper dead band
5 Lower dead band (only with cable versions)

Accuracy (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)

Characteristic curve deviation and measurement characteristics

Reference installation conditions	
– Flanges	DN 100
– min. distance to installations	1 m (3.3 ft)
– Min. distance to metal vessel bottom	20 mm (0.8 in)
Reference reflector	Metal plate ø 500 mm (20 in)
Temperature drift (current output)	0.06 %/10 K relating to the max. measuring range
Accuracy	
– Cable version	±3 mm (±0.12 in)
– Rod version	±3 mm (±0.12 in)

Ambient conditions

Ambient, storage and transport temperature	
– without indicating and adjustment module	-40 … +80 °C (-40 … +176 °F)
– with indicating and adjustment module	-20 … +70 °C (-4 … +158 °F)
– Version IP 66/IP 68 1 bar with connection cable PE	-20 … +60 °C (-4 … +140 °F)

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Process conditions

Process pressure

– Standard version	-1 … 40 bar/-100 … 4000 kPa (-14.5 … 580 psi) depending on the process fitting
– High temperature version	-1 … 400 bar/-100 … 40000 kPa (-14.5 … 5800 psi) depending on the process fitting

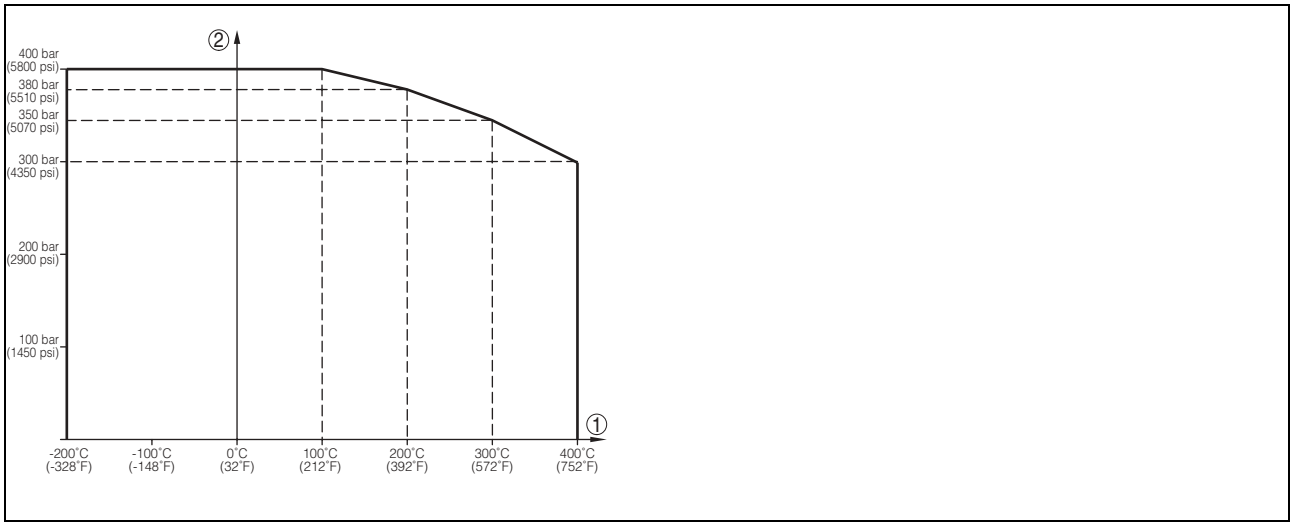

Fig. 16: High temperature version: Process pressure - product temperature

1 Product temperature
2 Process pressure

Process temperature (thread or flange temperature)

– Viton	-30 … +150 °C (-22 … +302 °F)
– Viton, FEP coated	-40 … +150 °C (-40 … +302 °F)
– EPDM	-40 … +150 °C (-40 … +302 °F)
– Kalrez 6375	-20 … +150 °C (-4 … +302 °F)
– High temperature version (seal graphite)	-200 … +400 °C (-328 … +752 °F)

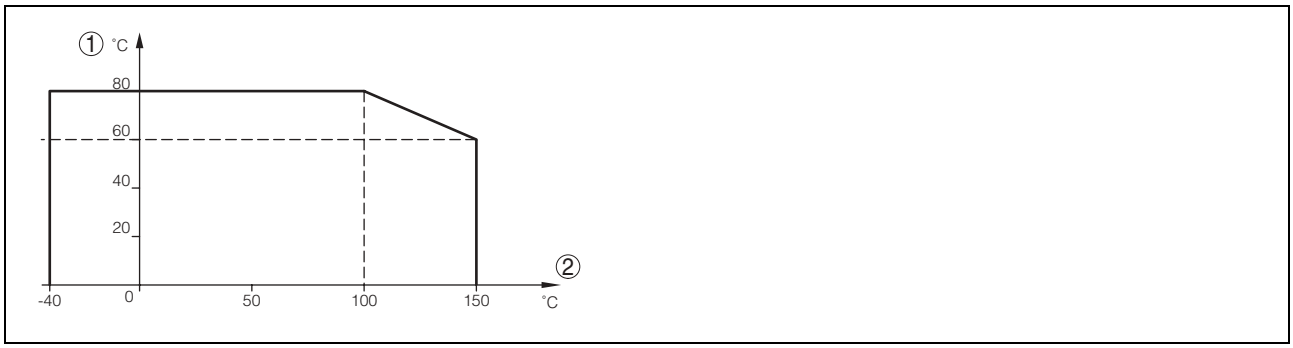

Fig. 17: VEGAFLEX - Ambient temperature - Product temperature

1 Ambient temperature
2 Product temperature (depending on the seal material)

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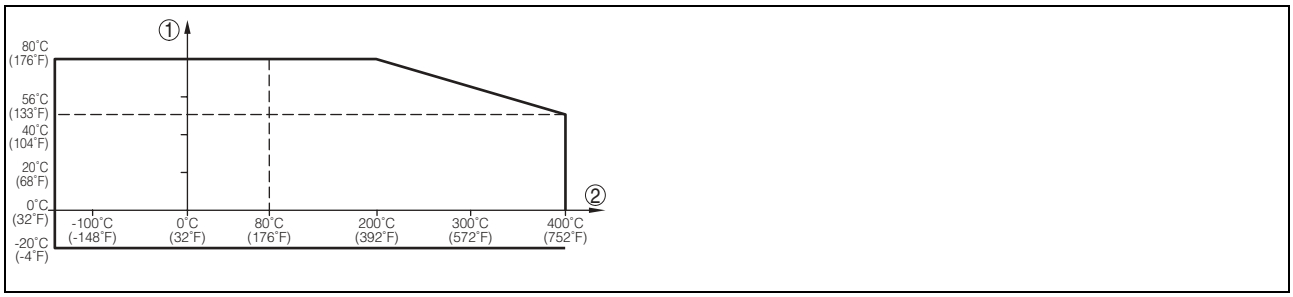

Fig. 18: Ambient temperature - product temperature (version -200 … +400 °C/-328 … +752 °F)

1 Ambient temperature

2 Product temperature (depending on the seal material)

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

Cable entry/plug [3]	
– Single chamber 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
– Double chamber housing	• 1x cable entry M20x1.5 (cable-ø 5 … 9 mm), 1x blind stopper M20x1.5; plug M12x1 for VEGADIS 61 (optional) 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)
Spring-loaded terminals	for wire cross sections up to 2.5 mm²

Indicating and adjustment module

Power supply and data transmission	through sensor via gold-plated sliding contacts (I^2C 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

Power supply VEGAFLEX - two-wire instrument

4 … 20 mA/HART

Supply voltage	
– non-Ex instrument	14 … 36 V DC
– EEx ia instrument	14 … 30 V DC
– EExd ia instrument	20 … 36 V DC
Permissible residual ripple	
– <100 Hz	U_{ss} <1 V
– 100 Hz … 10 kHz	U_{ss} <10 mV
Load	see diagram

[3] Depending on the version M12x1, acc. to DIN 43650, Harting, Amphenol-Tuchel, 7/8" FF; note plug protection.

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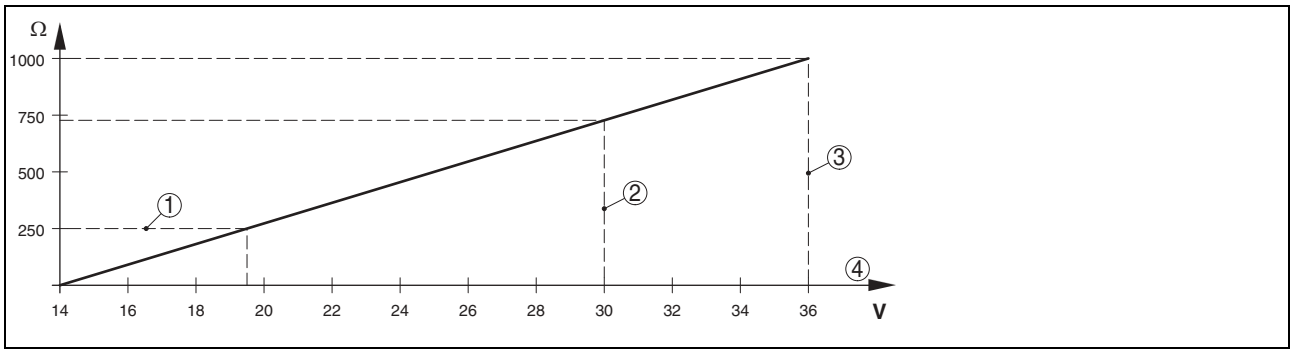

Fig. 19: Voltage diagram

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

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)

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)

Power supply VEGAFLEX - Four-wire instrument 4 … 20 mA

Four-wire instruments

Supply voltage	
– Non-Ex and EExd instrument	20 … 72 V DC, 20 … 253 V AC, 50/60 Hz
Power consumption	max. 4 VA; 2.1 W

Electrical protective measures

Protection	
– Plastic housing	IP 66/IP 67
– Double chamber Alu-housing, four-wire instruments	IP 66/IP 67
– Alu and stainless steel housing, two-wire instruments	IP 66/IP 68 (0.2 bar)[4]
– Alu and stainless steel housing optional, two-wire instruments	IP 66/IP 68 (1 bar)
Overvoltage category	III
Protection class	
– two-wire, Profibus PA, Foundation Fieldbus	II
– four-wire	I

Approvals[5]

ATEX II 1G, 1/2G, 2G EEx ia IIC T6
ATEX II 1/2G, 2G EExd ia IIC T6
Ship approvals
WHG

[4] Requirement to maintain the protection is the suitable cable.
[5] Deviating data in Ex applications: see separate safety instructions.

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CE conformity

EMVG (89/336/EWG), Emission EN 61326: 1997 (class B),
Susceptibility EN 61326: 1997/A1: 1998
LVD (73/23/EWG), EN 61010-1: 2001
NAMUR recommendation NE 21

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7 Dimensions

Housing

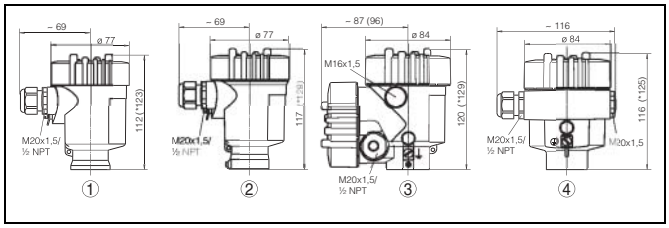

Fig. 20: Housing versions

1 Plastic housing (dimension with integrated PLICSCOM)*
2 Stainless steel housing (dimension with integrated PLICSCOM)*
3 Aluminium double chamber housing (dimension with integrated PLICSCOM)*
4 Aluminium housing (dimension with integrated PLICSCOM)*

VEGAFLEX 61 - cable and rod version

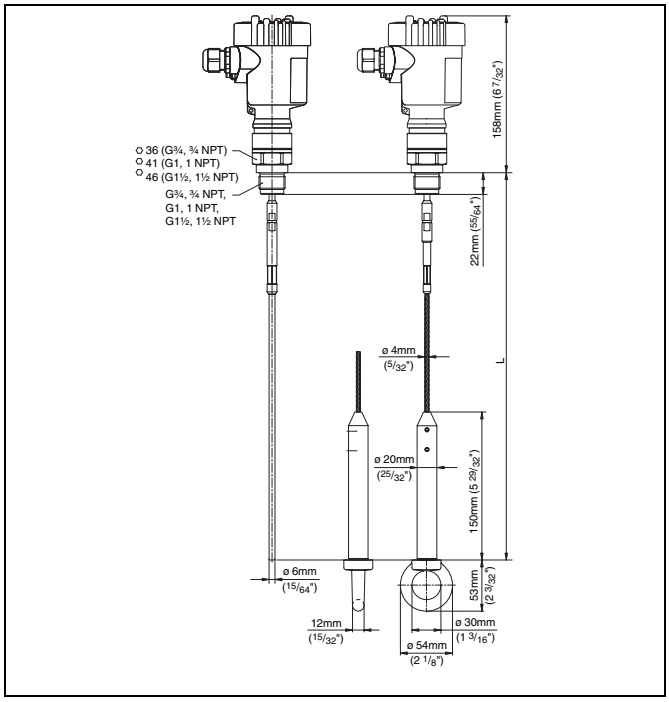

Fig. 21: VEGAFLEX 61 - cable and rod version with thread

L = Sensor length, see "Technical data"

VEGAFLEX 61 - cable and rod version

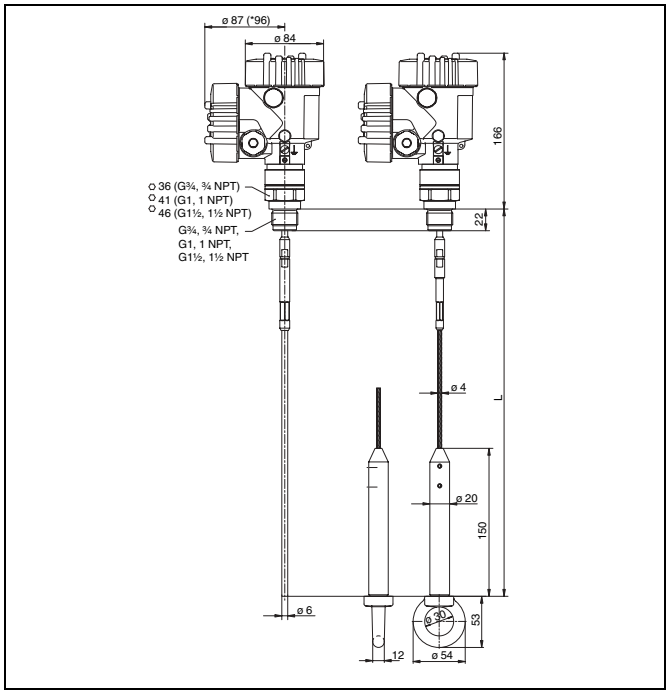

Fig. 22: VEGAFLEX 61 - cable and rod version with thread (double chamber housing)

L = Sensor length, see "Technical data"

VEGAFLEX 62 - cable and rod version

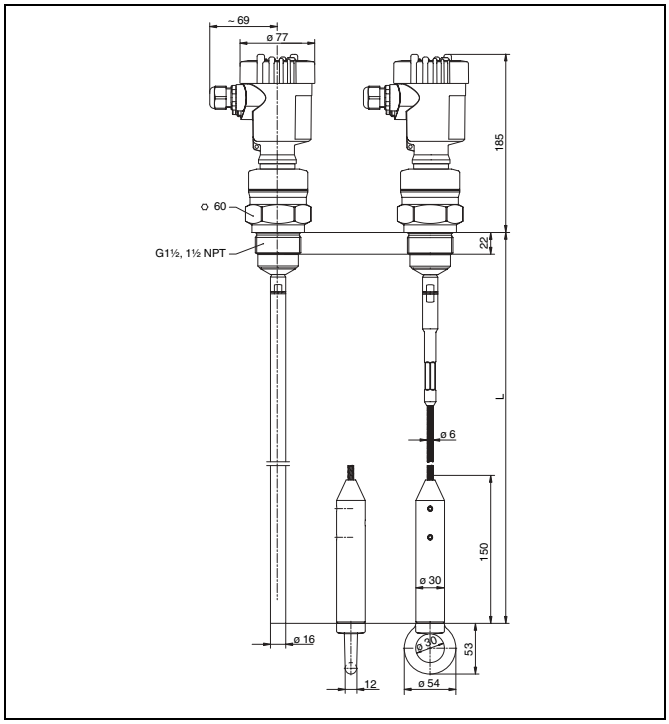

Fig. 23: VEGAFLEX 62 - cable and rod version with thread

L = Sensor length, see "Technical data"

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VEGAFLEX 62 - cable and rod version

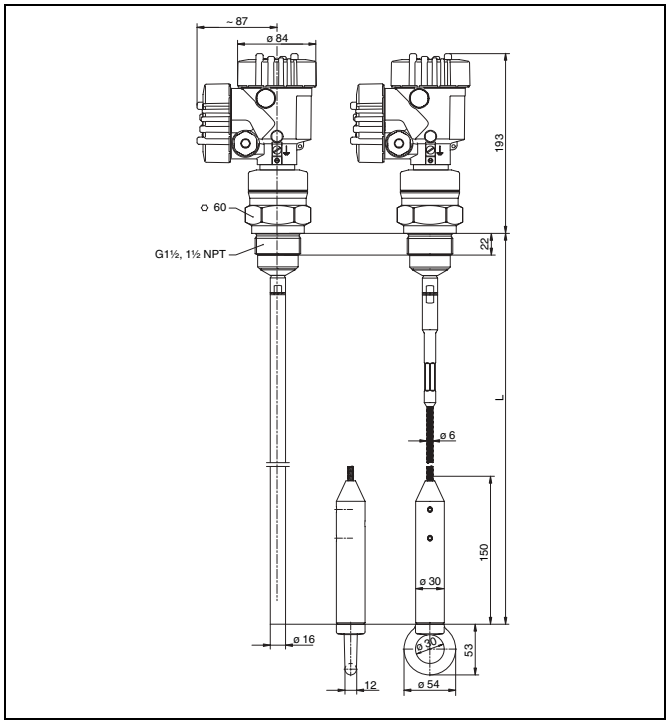

Fig. 24: VEGAFLEX 62 - cable and rod version with thread (double chamber housing)

L = Sensor length, see "Technical data"

VEGAFLEX 66 - rod, cable version -200 … +400 °C (-328 … +752 °F)

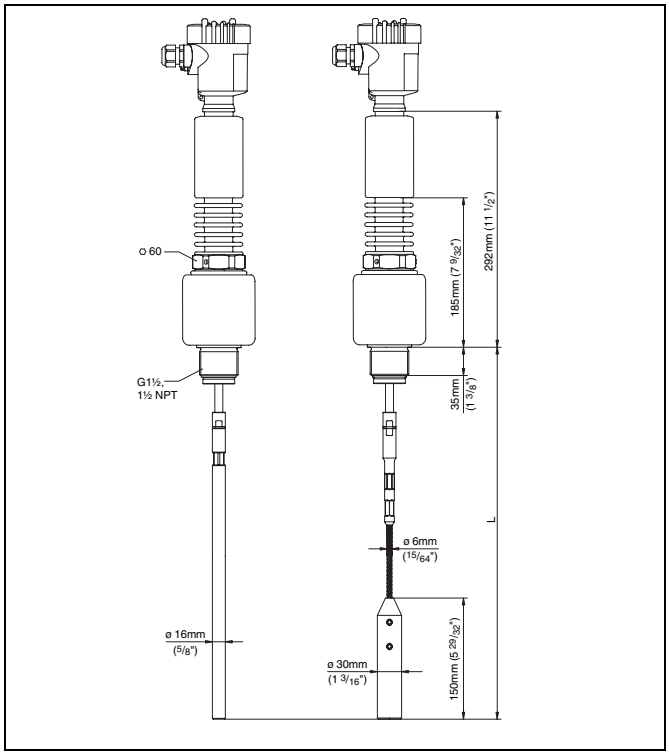

Fig. 25: VEGAFLEX 66 - rod, cable version -200 … +400 °C (-328 … +752 °F)

L = Sensor length, see "Technical data"

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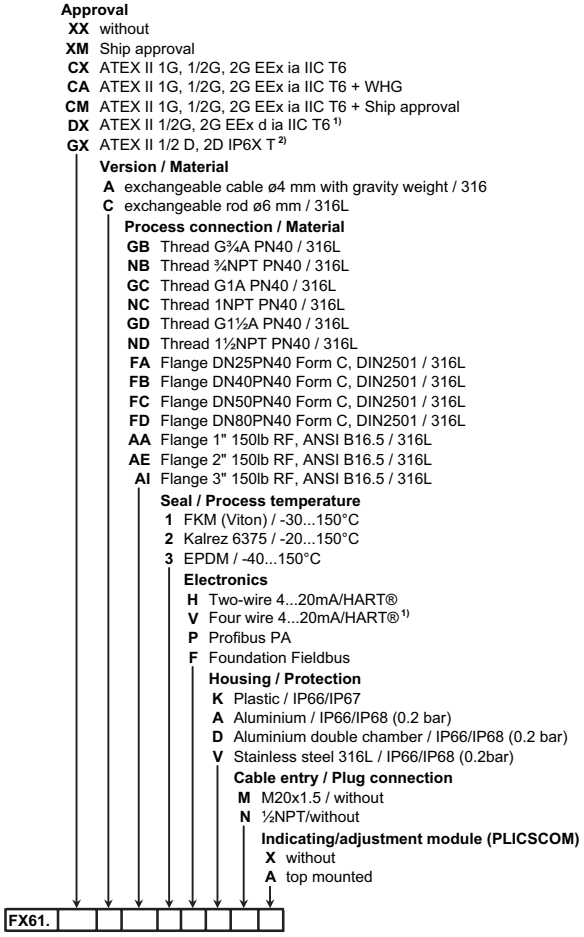
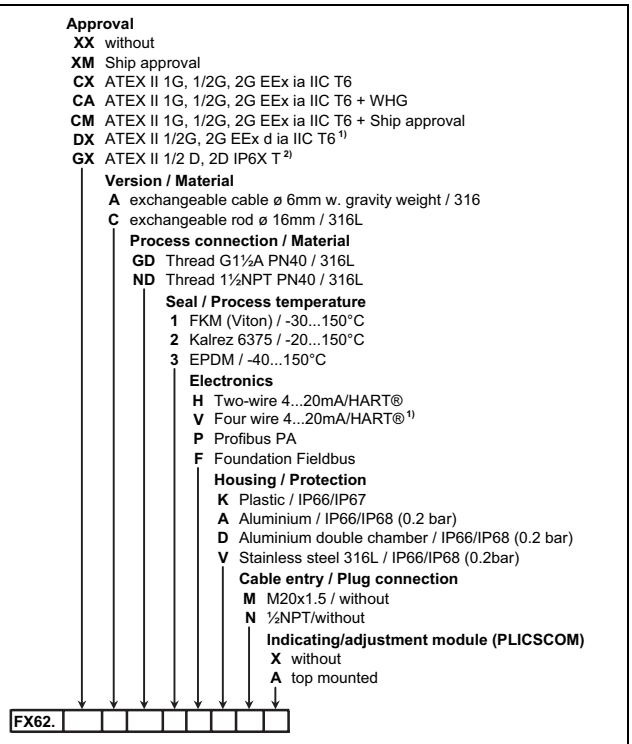
8 Product code

VEGAFLEX 61



1) Only in conjunction with Housing / Protection "D"
2) Not in conjunction with Housing / Protection "K"

VEGAFLEX 62



1) Only in conjunction with Housing / Protection "D"
2) Not in conjunction with Housing / Protection "K"

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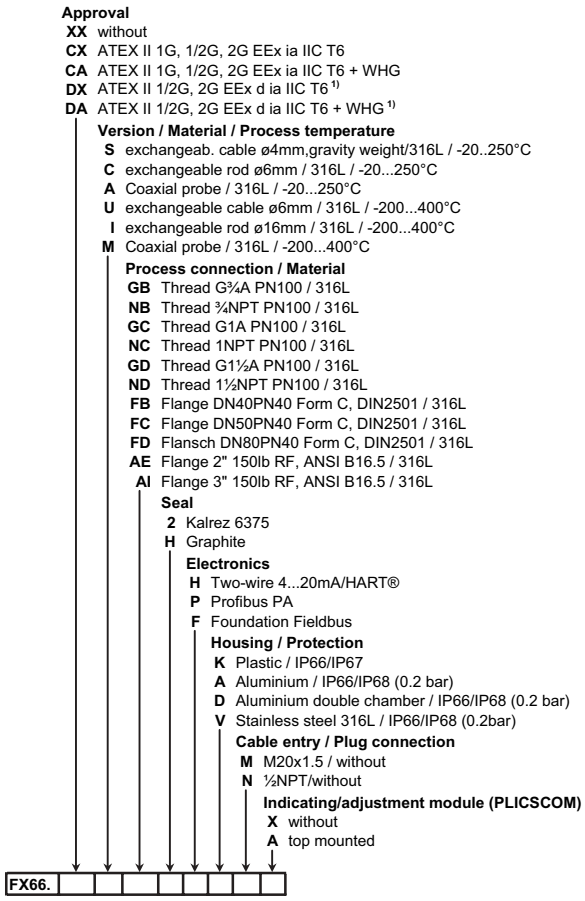
VEGAFLEX 66



1) Only in conjunction with Housing / Protection "D"

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