

VEGA

Operating Instructions VEGADIS 12



Indication
and adjustment



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1 About this document

1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

1.2 Target group

This operating instructions manual is directed to trained, qualified personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbolism used



Information, tip, note

This symbol indicates helpful additional information.



Caution: If this warning is ignored, faults or malfunctions can result.

Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



Ex applications

This symbol indicates special instructions for Ex applications.



List

The dot set in front indicates a list with no implied sequence.



Action

This arrow indicates a single action.



Sequence

Numbers set in front indicate successive steps in a procedure.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the operator.

During work on and with the device the required personal protection equipment must always be worn.

2.2 Appropriate use

VEGADIS 12 is an adjustment and indicating unit for VEGA pressure transmitters.

2.3 Warning about misuse

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the required occupational safety measures with the current valid rules and regulations and also take note of new regulations.

2.5 Safety approval markings and safety tips

The safety approval markings and safety tips on the device must be observed.

2.6 CE conformity

VEGADIS 12 is in CE conformity with EMC (89/336/EWG) and LVD (73/23/EWG) and fulfills NAMUR recommendation NE 21.

Conformity has been judged according to the following standards:

- EMC:
 - Emission EN 50081
 - Susceptibility EN 50082
- LVD: EN 61010

2.7 Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions manual and come with the Ex-approved instruments.

2.8 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfil this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- Indicating and adjustment unit VEGADIS 12
- Documentation
 - this operating instructions manual
 - Ex-specific "Safety instructions" (with Ex-versions)
 - if necessary, further certificates

Components

VEGADIS 12 consists of the following components:

- Housing with adjustment elements
- Housing cover with integrated indicating module

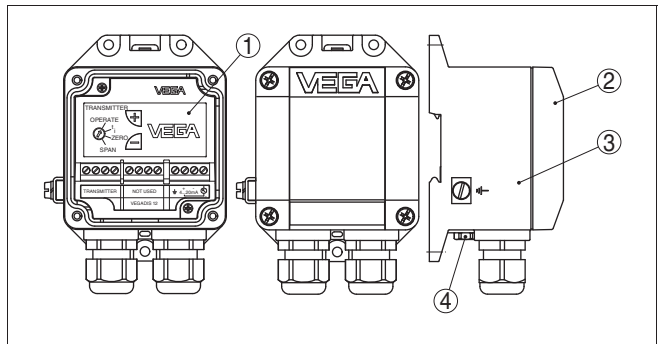


Fig. 1: VEGADIS 12 without display

- 1 Adjustment insert
- 2 Cover
- 3 Housing
- 4 Breather facility

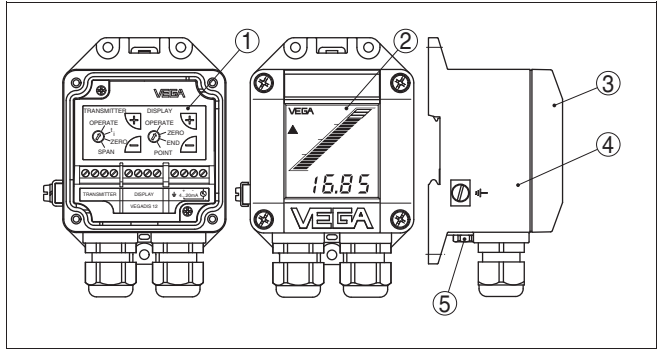


Fig. 2: VEGADIS 12 with display

- 1 Adjustment insert
- 2 Indication
- 3 Cover
- 4 Housing
- 5 Breather facility

3.2 Principle of operation

Area of application

VEGADIS 12 is an adjustment and indicating unit for the following VEGA pressure transmitters:

- VEGAWELL 72 4 ... 20 mA/HART
- VEGABAR 74 4 ... 20 mA/HART
- VEGABAR 75 4 ... 20 mA/HART

Functional principle

VEGADIS 12 has the following functions:

- atmospheric pressure compensation for the pressure transmitter
- Adjustment of the pressure transmitter
- Indication of the measured value (optional)

Supply

VEGADIS 12 is looped in the supply and signal circuit of the pressure transmitter and requires no separate external energy. Connection is carried out via screw terminals in the housing.

3.3 Operation

As a standard feature, VEGADIS 12 is equipped with an adjustment module for the pressure transmitter. The optional indication is located in the housing cover and is equipped with a bargraf and a digital indication. In this version, the additional adjustment elements for scaling of the indication are integrated.

3.4 Packaging, transport and storage

Packaging	<p>Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test according to DIN EN 24180.</p> <p>The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.</p>
Transport	<p>Transport must be carried out under consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.</p>
Transport inspection	<p>The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.</p>
Storage	<p>Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.</p> <p>Unless otherwise indicated, the packages must be stored only under the following conditions:</p> <ul style="list-style-type: none">● Not in the open● Dry and dust free● Not exposed to corrosive media● Protected against solar radiation● Avoiding mechanical shock and vibration
Storage and transport temperature	<ul style="list-style-type: none">● Storage and transport temperature see "<i>Supplement - Technical data - Ambient conditions</i>"● Relative humidity 20 ... 85 %

4 Mounting

4.1 General instructions

Installation position

VEGADIS 12 can be mounted in any position. However, vertical mounting is recommended. This avoids pollution of the breather facility and moisture penetration.



Note:

There must be the same atmospheric pressure on the breather facility as well as on the measurement loop. Otherwise the measured value can be adulterated.

Moisture

Use the recommended cables (see chapter "*Connecting to power supply*") and tighten the cable gland.

4.2 Mounting instructions

Mounting versions

VEGADIS 12 can be mounted as follows:

- on carrier rail 35 x 7.5 according to EN 50022
- on mounting plate or on the wall

5 Connecting to power supply

5.1 Preparing the connection

Note safety instructions

Take note of safety instructions for Ex applications



Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage

In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units.

Selecting connection cable

VEGABOX 01 or VEGADIS 12 is connected with standard two-wire cable without screen. An outer cable diameter of 5 ... 9 mm ensures the seal effect of the cable entry. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, we recommend the use of screened cable.

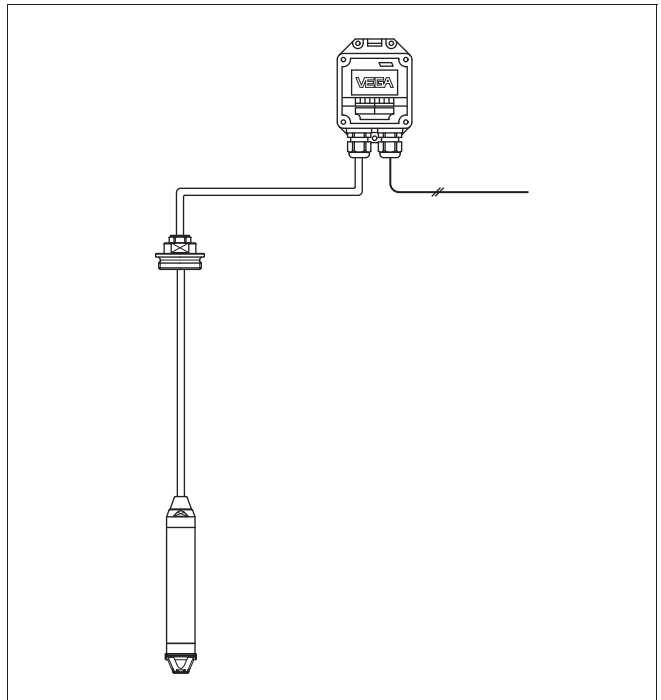


Fig. 3: Connection of VEGADIS 12 to the sensor

Select connection cable for Ex applications

Take note of the corresponding installation regulations for Ex applications.

Cable screening and grounding

If screened cable is necessary, connect the cable screen on both ends to ground potential. In VEGABOX 01 or in VEGADIS 12, the screen must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation.

If potential equalisation currents are expected, the connection on the processing side must be made via a ceramic capacitor (e. g. 1 nF, 1500 V). The low frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.

Cable screen and grounding for Ex applications

In Ex applications, one-sided grounding on the sensor is recommended, see EN 60079-14.

5.2 Connection procedure

Proceed as follows:

- 1 Unscrew the housing cover
- 2 Loosen compression nut of the cable entry
- 3 Remove approx. 10 cm of the cable mantle, strip approx. 1 cm insulation from the individual wires
- 4 Insert the cable into VEGADIS 12 through the cable entry
- 5 Loosen screw terminals with a screwdriver
- 6 Insert the wire ends into the open terminals according to the wiring plan
- 7 Tighten screw terminals again
- 8 Check the hold of the wires in the terminals by lightly pulling on them
- 9 Connect the screen to the ground terminal
- 10 Connect the ground terminal outside on the housing according to specification (low impedance)
- 11 Tighten the compression nut of the cable entry. The seal ring must completely encircle the cable
- 12 Screw the housing cover on

The electrical connection is finished.

5.3 Wiring plan

Wire assignment, connection cable pressure transmitter

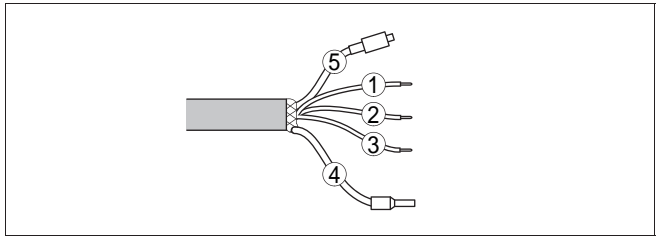


Fig. 4: Wire assignment, connection cable

- 1 brown (+): to power supply or to the processing system
- 2 blue (-): to power supply or to the processing system
- 3 yellow: for adjustment information of VEGADIS 12
- 4 Screen
- 5 Breather capillaries with filter element

Connection of VEGADIS 12 without display

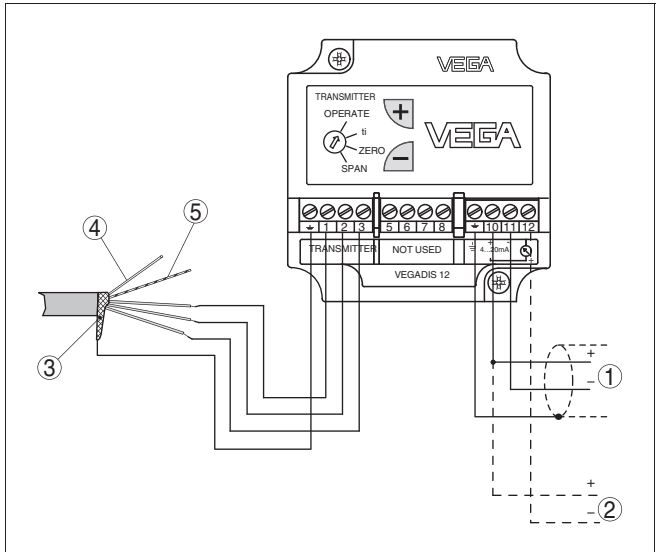


Fig. 5: Terminal assignment, VEGADIS 12

- 1 To power supply or the processing system
- 2 Control instrument (4 ... 20 mA measurement)
- 3 Screen¹⁾
- 4 Breather capillaries
- 5 Suspension cable

¹⁾ Connect screen to ground terminal. Connect ground terminal on the outside of the housing as prescribed. The two terminals are galvanically connected.

Wire number	Wire colour/Polarity	Terminal VEGADIS 12
1	brown (+)	1
2	blue (-)	2
3	Yellow	3

Connection of VEGADIS 12 with display

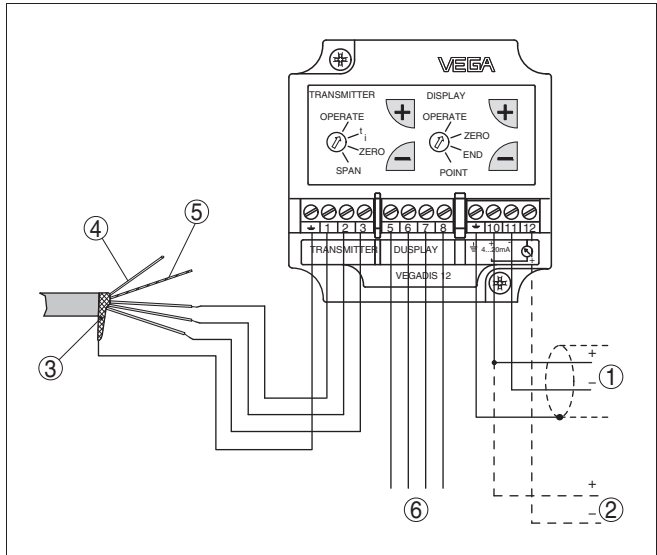


Fig. 6: Terminal assignment, VEGADIS 12

- 1 To power supply or the processing system
- 2 Control instrument (4 ... 20 mA measurement)
- 3 Screen²⁾
- 4 Breather capillaries
- 5 Suspension cable
- 6 for indication

Wire number	Wire colour/Polarity	Terminal VEGADIS 12
1	brown (+)	1
2	blue (-)	2
3	Yellow	3

²⁾ Connect screen to ground terminal. Connect ground terminal on the outside of the housing as prescribed. The two terminals are galvanically connected.

Wire number	Wire colour	Terminal VEGADIS 12
5	Red	5
6	White	6
7	Violet	7
8	Orange	8

6 Set up

6.1 Adjustment of the pressure transmitter

Adjustment volume

- zero - measuring range begin
- span - measuring range end
- ti - Integration time

Adjustment elements

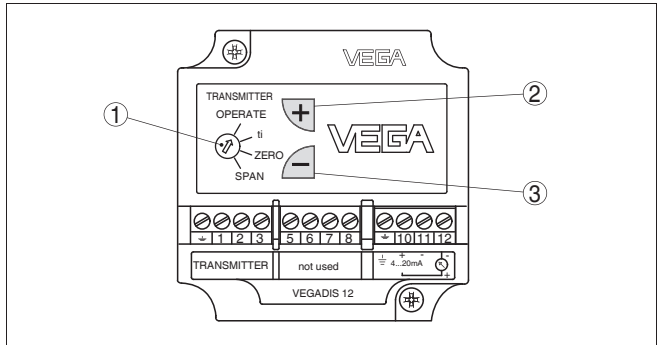


Fig. 7: Adjustment elements of VEGADIS 12 without display

- 1 Rotary switch: choose the requested function
- 2 [+] key, change value (rising)
- 3 [-] key, change value (falling)

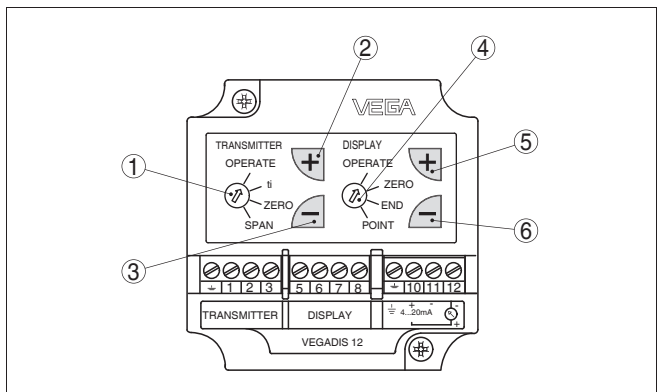


Fig. 8: Adjustment elements of VEGADIS 12 with display

- 1 Rotary switch pressure transmitter: Select requested function
- 2 [+] key, change adjustment value (rising)
- 3 [-] key, change adjustment value (falling)
- 4 Rotary switch indication: choose the requested function
- 5 [+] key, change scaling (rising)
- 6 [-] key, change scaling (falling)

Adjustment system

- The requested function is selected with the rotary switches
- With the **[+]** and **[-]** keys the signal current or the integration time is set or the indication is scaled
- The respective rotary switch is finally set to position "OPERATE"

The set values are transmitted to the EEPROM memory and remain there even in case of voltage loss.

Adjustment steps, adjustment

Proceed as follows for adjustment with VEGADIS 12:

- 1 Open housing cover
- 2 Connect hand multimeter to terminals 10 and 12
- 3 Meas. range begin: Set rotary switch to "zero"
- 4 Empty the vessel or reduce process pressure
- 5 Set a current of 4 mA with the **[+]** and **[-]** keys
- 6 Meas. range end: Set rotary switch to "span"
- 7 Fill the vessel or increase process pressure
- 8 Set a current of 20 mA with the **[+]** and **[-]** keys
- 9 Operation: Set rotary switch to "OPERATE"
- 10 Close the housing cover

The adjustment data are effective, the output current 4 ... 20 mA corresponds to the actual level or pressure.

**Information:**

The corresponding current values must be calculated and set respectively for adjustment with part fillings or emptyings.

Example: For a part emptying of 25 %, a current of 4 mA + 4 mA = 8 mA must be set, for a part filling of 75 %, a current of 4 mA + 12 mA = 16 mA. VEGADIS 12 then calculates the values for full and empty.

Adjustment steps, integration time

Proceed as follows for the adjustment of the integration time with VEGADIS 12:

- 1 Open housing cover
- 2 Set rotary switch to "t"
- 3 Make sure that the integration time is set to 0 sec by pressing the **[-]** key 10 times.
- 4 For every 1 sec. requested integration time, push the **[+]** key once.

- 5 The integration time is the time required by the output current signal to reach 90 % of the actual height after a sudden level change.
- 6 Set rotary switch to "OPERATE"
- 7 Close the housing cover

6.2 Indication scaling

Indicating elements

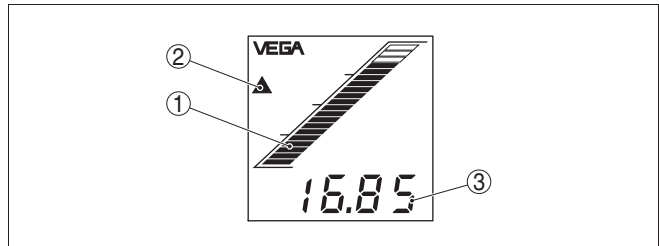


Fig. 9: Indicating elements of VEGADIS 12

- 1 Bar graph
- 2 Tendency indication
- 3 Digital value
 - four positions as well as signa and decimal point
 - individual scaling between -9999 ... +9999

The display outputs the current 4 ... 20 mA as bar graph and digital value.

With 4 mA no segment of the bar graph appears, with 20 mA all segments appear. This assignment is fix.

You can scale the digital value to any value between -9999 ... +9999 via the adjustment module.

Adjustment steps, scaling

To scale, proceed as follows:

- 1 Open housing cover
- 2 Initial value: Set rotary switch to "zero"
- 3 Set the requested value, e.g. 0 with the **[+]** and **[-]** keys
- 4 Final value: Set the rotary switch to "span"
- 5 Set the requested value, e.g. 1000 with the **[+]** and **[-]** keys
- 6 Decimal point: Set the rotary switch to "point"
- 7 With the **[+]** and **[-]** keys you can adjust the requested value, e.g. 8888 (no decimal point)
- 8 Set rotary switch to "OPERATE"
- 9 Close the housing cover

The adjustment data are effective, the output current 4 ... 20 mA corresponds to the actual level.

7 Maintenance and fault rectification

7.1 Maintenance

When used as directed in normal operation, VEGADIS 12 is completely maintenance free.

7.2 Remove interferences

Reaction in case of failures	The operator of the system is responsible for taken suitable measures to remove interferences.
Causes of malfunction	<p>VEGADIS 12 offers maximum reliability. Nevertheless faults can occur during operation. These may be caused by the following, e.g.:</p> <ul style="list-style-type: none"> ● Sensor ● Process ● Supply ● Signal processing
Fault rectification	The first measure to take is to check the output signal as well as the atmospheric pressure compensation. The procedure is described below. Further comprehensive diagnostics can be carried out on a PC with the software PACTware™ and the suitable DTM. In many cases, the causes can be determined in this way and faults can be rectified.
24 hour service hotline	<p>However, if these measures are not successful, call the VEGA service hotline in urgent cases under the phone no. +49 1805 858550.</p> <p>The hotline is available to you 7 days a week round-the-clock. Since we offer this service world-wide, the support is only available in the English language. The service is free of charge, only the standard telephone costs will be charged.</p>
Check pressure compensation	First of all open the housing cover. The indicated measured value must not change. However, if the indicated value changes nevertheless, the compensation of the atmospheric pressure is not ensured. Check the breather facility on the housing and the capillaries in the special cable.
Checking the 4 ... 20 mA signal	Connect a handheld multimeter in the suitable measuring range according to the wiring plan.

- ? 4 ... 20 mA signal not stable
 - Level fluctuations
 - Adjust integration time via PACTware™
 - no atmospheric pressure compensation
 - Check the capillaries and cut them clean
 - Check the pressure compensation in the housing and clean the filter element, if necessary

- ? 4 ... 20 mA signal missing
 - Wrong connection to power supply
 - Check connection according to chapter "*Connection steps*" and if necessary, correct according to chapter "*Wiring plan*"
 - No voltage supply
 - Check cables for breaks; repair if necessary
 - supply voltage too low or load resistance too high
 - Check, adapt if necessary

- ? Current signal 3.6 mA; 22 mA
 - electronics module or measuring cell defective
 - Exchange instrument or return instrument for repair



In Ex applications, the regulations for the wiring of intrinsically safe circuits must be observed.

Reaction after fault rectification

Depending on the failure reason and measures taken, the steps described in chapter "*Set up*" must be carried out again, if necessary.

7.3 Instrument repair

If a repair is necessary, please proceed as follows:

You can download a return form (23 KB) from the Internet on our homepage www.vega.com under: "*Downloads - Forms and certificates - Repair form*".

By doing this you help us carry out the repair quickly and without having to call for needed information.

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof

- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please ask the agency serving you for the address of your return shipment. You can find the respective agency on our website www.vega.com under: "*Company - VEGA world-wide*"

8 Dismounting

8.1 Dismounting steps

**Warning:**

Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the electronics to be easily separable.

WEEE directive 2002/96/EG

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects to persons and environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you cannot dispose of the instrument properly, please contact us about disposal methods or return.

9 Supplement

9.1 Technical data

General data

316L corresponds to 1.4404 or 1.4435, 316Ti corresponds to 1.4571

Materials

- Housing plastic PBT
- Ground terminal 316Ti/316L
- Inspection window of the indication

Weight approx. 0.5 kg (1.102 lbs)

Ambient conditions

Ambient temperature

- without display -40 ... +85 °C (-40 ... +185 °F)
- with display -20 ... +70 °C (-40 ... +158 °F)

Storage and transport temperature -40 ... +85 °C (-40 ... +185 °F)

Electromechanical data

Cable gland 2 x cable entry M20 x 1.5 (cable-ø 5 ... 9 mm)
Screw terminals for wire cross-section up to 2.5 mm² (AWG 14)

Indicating and adjustment elements

Adjustment elements 2 x 2 keys, 2 x 1 rotary switch
Adjustment elements with display 2 keys, 1 rotary switch
Display (optional) LC multiple function display with bar graph (20 segments, digital value 4-digit), tendency indicator for rising or falling values

Adjustment circuit

Connection to VEGAWELL 72 4 ... 20 mA/HART, VEGABAR 74, VEGABAR 75
Connection cable to the sensor VEGA special cable with breather capillaries
Cable length max. 200 m

Voltage supply

Supply voltage
– without display 12 ... 36 V DC
– with display 17 ... 36 V DC

Load without display

see diagram in the operating instructions
manual of the respective sensor

Electrical protective measures

Protection	IP 65
Overvoltage category	III
Protection class	III

Approvals³⁾

ATEX ia	ATEX II 2G EEx ia IIC T6
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³⁾ Deviating data in Ex applications: see separate safety instructions.

9.2 Dimensions

VEGADIS 12 without display

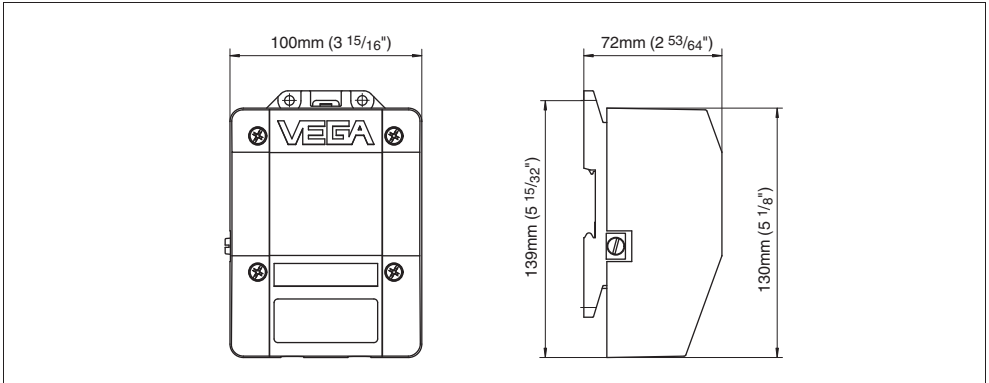


Fig. 10: VEGADIS 12 without display (protective cover optional)

VEGADIS 12 with display

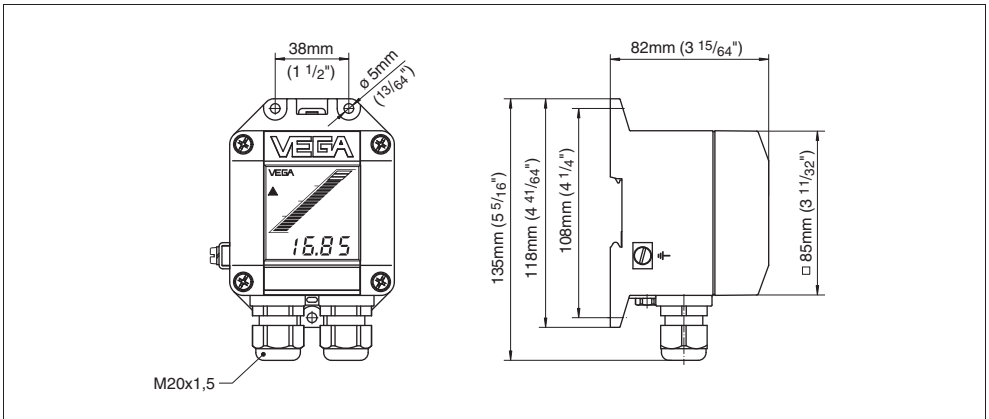


Fig. 11: VEGADIS 12 with display

9.3 Industrial property rights

VEGA product lines are global protected by industrial property rights.

Further information see <http://www.vega.com>.

Only in U.S.A.: Further information see patent label at the sensor housing.

VEGA Produktfamilien sind weltweit geschützt durch gewerbliche Schutzrechte.

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9.4 Trademark

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All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

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