

Operating Instructions

External display and adjustment unit

VEGADIS 82

4 ... 20 mA



Document ID: 46591



VEGA

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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.

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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 specialist personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbols 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 of actions

Numbers set in front indicate successive steps in a procedure.



Battery disposal

This symbol indicates special information about the disposal of batteries and accumulators.

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 plant operator.

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

2.2 Appropriate use

The VEGADIS 82 is suitable for measured value indication in 4 ... 20 mA signal current circuits.

You can find detailed information about the area of application in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

2.3 Warning about incorrect use

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 state-of-the-art instrument complying with all prevailing regulations and guidelines. The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for the trouble-free operation of the instrument.

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

The safety instructions in this operating instructions manual, the national installation standards as well as the valid safety regulations and accident prevention rules must be observed by the user.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

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

2.5 CE conformity

The device fulfills the legal requirements of the applicable EC guidelines. By affixing the CE marking, we confirm successful testing of the product.

You can find the conformity certificate in the download section under www.vega.com.

2.6 NAMUR recommendations

NAMUR is the automation technology user association in the process industry in Germany. The published NAMUR recommendations are accepted as the standard in field instrumentation.

The device fulfills the requirements of the following NAMUR recommendations:

- NE 53 – Compatibility of field devices and display/adjustment components

For further information see www.namur.de.

2.7 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 fulfill this obligation by observing the environmental instructions in this manual:

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

3 Product description

3.1 Configuration

Type label

The type label on the housing contains the most important data for identification and use of the instrument:



Fig. 1: Layout of the type label (example)

- 1 Instrument type
- 2 Product code
- 3 Field for approvals
- 4 Electronics/Voltage supply
- 5 Protection rating
- 6 Hardware/software version
- 7 Order number
- 8 Serial number of the instrument
- 9 Data-Matrix-Code for Smartphone-App
- 10 Reminder to observe the instrument documentation
- 11 Device protection class
- 12 ID numbers, instrument documentation

Serial number - Instrument search

The type label contains the serial number of the instrument. With it you can find the following instrument data on our homepage:

- Article number (HTML)
- Delivery date (HTML)
- Order-specific instrument features (HTML)
- Operating instructions at the time of shipment (PDF)

Go to www.vega.com, "VEGA Tools" and "Instrument search". Enter the serial number.

As an alternative, you can access these data via your smartphone:

- Download the smartphone app "VEGA Tools" from the "Apple App Store" or the "Google Play Store"
- Scan the Data Matrix code on the type label of the instrument or
- Enter the serial number manually in the app

Instrument versions

The VEGADIS 82 is available in different housing materials, see chapter "Technical data".

The instrument is optionally available with or without display and adjustment module.

Scope of this operating instructions manual

This operating instructions manual applies to the following instrument versions:

- Software from 1.0.0

- Hardware from 1.0.0

Scope of delivery

The scope of delivery encompasses:

- Display and adjustment unit
- Mounting accessories (optional)
- Documentation
 - this operating instructions manual
 - Ex-specific "*Safety instructions*" (with Ex versions)
 - if necessary, further certificates



Information:

In this operating instructions manual, the optional instrument features are also described. The actual range of functions is determined by the order specification.

3.2 Principle of operation

Area of application

The VEGADIS 82 is suitable as measured value indication with 4 ... 20 mA current loops. The instrument can be connected at any point to the 4 ... 20 mA signal cable. Separate, external energy is not required.

The measured value indication is carried out in the VEGADIS 82 integrated in the display and adjustment module.

Sensors

The VEGADIS 82 is suitable for connection to any 4 ... 20 mA sensors.

The instrument is particularly designed for:

- VEGAPULS WL 61
- VEGAWELL 52

The housing of VEGADIS 82 contains a filter element for ventilation. Hence the instrument is also used for atmospheric pressure compensation of the submersible pressure transmitter.

The VEGADIS 82 can also be used as an external indicating device for any four-wire sensor or a VEGAMET signal conditioning instrument with active 4 ... 20 mA output.

Connection

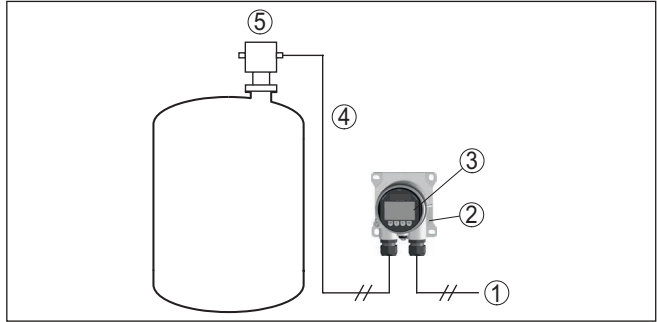


Fig. 2: Connection of VEGADIS 82 to the sensor

- 1 Voltage supply/Signal output sensor
- 2 VEGADIS 82
- 3 Display and adjustment module
- 4 4 ... 20 mA signal cable
- 5 Sensor

3.3 Packaging, transport and storage

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test based on ISO 4180.

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.

Transport

Transport must be carried out in due consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.

Transport inspection

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.

Storage

Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.

Unless otherwise indicated, the packages must be stored only under the following conditions:

- 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 see chapter "Supplement - Technical data - Ambient conditions"
 - Relative humidity 20 ... 85 %

Storage and transport temperature

3.4 Accessories and replacement parts

PLICSCOM

The display and adjustment module PLICSCOM is used for measured value indication, adjustment and diagnosis. It can be inserted into the sensor or the external display and adjustment unit and removed at any time.

You can find further information in the operating instructions "*Display and adjustment module PLICSCOM*" (Document-ID 27835).

VEGACONNECT

The interface adapter VEGACONNECT enables the connection of communication-capable instruments to the USB interface of a PC. For parameter adjustment of these instruments, the adjustment software PACTware with VEGA-DTM is required.

You can find further information in the operating instructions "*Interface adapter VEGACONNECT*" (Document-ID 32628).

Electronics module

The electronics module is a replacement part for the display and adjustment instrument VEGADIS 82. A separate version is available for each type of signal output.

You can find further information in the operating instructions "*Electronics module VEGADIS 82*" (Document-ID 46804).

4 Mounting

4.1 General instructions

Installation position

VEGADIS 82 functions in any installation position.

Protection against moisture

Protect your instrument against moisture penetration through the following measures:

- Use the recommended cable (see chapter "Connecting to power supply")
- Tighten the cable gland
- Turn the housing in such a way that the cable gland points downward
- Loop the connection cable downward in front of the cable gland

This applies particularly to:

- Outdoor mounting
- Installations in areas where high humidity is expected (e.g. through cleaning processes)
- Installations on cooled or heated vessels

4.2 Mounting instructions

Wall mounting

The VEGADIS 82 is suitable for wall mounting in all available housing materials.

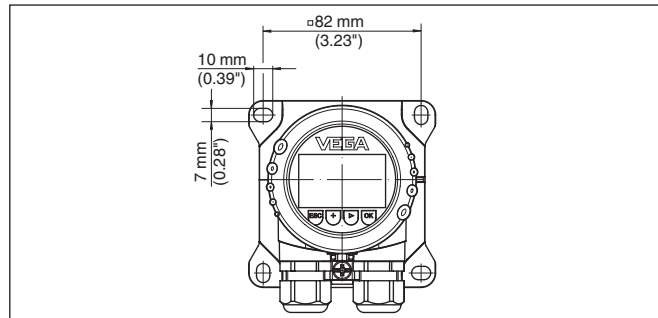


Fig. 3: Drilling dimensions for VEGADIS 82 for wall mounting

Carrier rail mounting

The VEGADIS 82 with plastic housing is suitable for direct carrier rail mounting according to EN 50022.

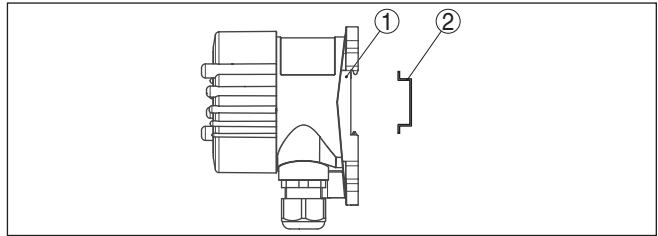


Fig. 4: VEGADIS 82 with plastic housing for carrier rail mounting

- 1 Base
- 2 Carrier rail

The versions with aluminium or stainless steel housing for carrier rail mounting according to EN 50022 are supplied with unassembled mounting accessories. The kit consists of an adapter plate and four mounting screws M5 x 12.

The adapter plate is screwed to the base of VEGADIS 82 by the user.

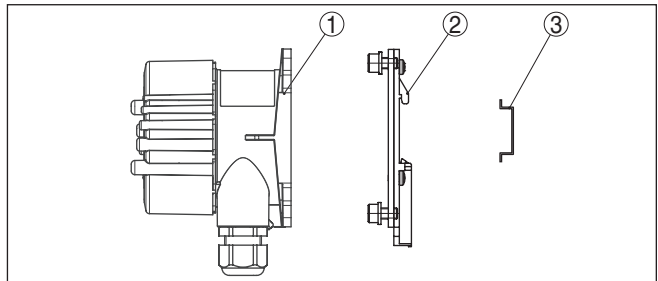


Fig. 5: VEGADIS 82 with aluminium and stainless steel housing for carrier rail mounting

- 1 Base
- 2 Adapter plate with screws M5 x 12
- 3 Carrier rail

Tube mounting

The VEGADIS 82 for tube mounting is supplied with unassembled mounting accessories. The kit consists of two pairs of mounting brackets and four mounting screws M5 x 12.

The mounting brackets are screwed to the socket of VEGADIS 82 by the user.

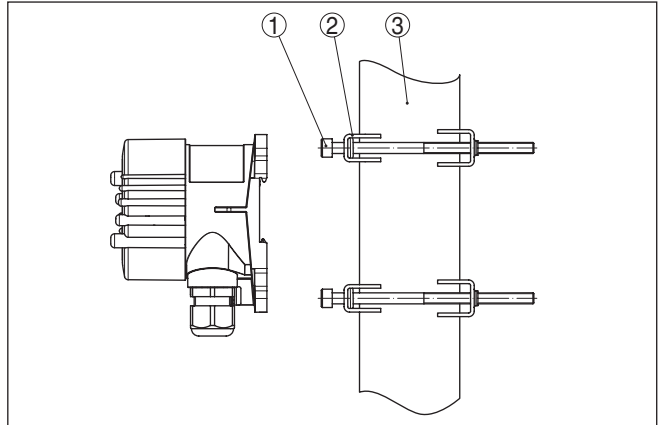


Fig. 6: VEGADIS 82 for tube mounting

- 1 4 screws M5 x 100
- 2 Mounting brackets
- 3 Tube (diameter 1" to 2")

Front panel mounting

The VEGADIS 82 is also available with a plastic housing for panel mounting. The housing is fastened by means of the supplied screw clamps on the rear of the panel.

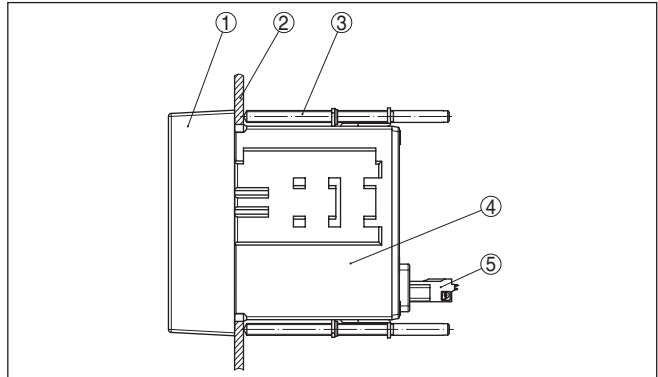


Fig. 7: VEGADIS 82 for panel mounting

- 1 Inspection window
- 2 Front panel
- 3 Screw clamp
- 4 Housing
- 5 Plug connector

5 Connecting to power supply

5.1 Preparing the connection

Safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage
- If overvoltage surges are expected, overvoltage arresters should be installed

Voltage supply

Power supply and current signal are carried on the same two-wire cable. The voltage supply range can differ depending on the sensor. The data for power supply are specified in chapter "*Technical data*".

Provide a reliable separation between the supply circuit and the mains circuits according to DIN EN 61140 VDE 0140-1.

Keep in mind the following additional factors that influence the operating voltage:

- Output voltage of the power supply unit can be lower under nominal load (with a sensor current of 20.5 mA resp. 22 mA in case of fault message)
- Voltage loss on the VEGADIS 82 (see supply circuit in chapter "*Technical data*")

You can find information on the load resistance in chapter "*Technical data*", (voltage supply of the respective sensor)

Connection cable

The instrument is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326-1 for industrial areas, screened cable should be used.

Use cable with round cross-section. To ensure the seal effect of the cable gland (IP protection rating), find out which cable outer diameter the cable gland is suitable for. Use a cable gland fitting the cable diameter.

You can find an overview of the cable glands in chapter "*Technical data*".

Cable gland ½ NPT

With plastic housing, the NPT cable gland or the Conduit steel tube must be screwed without grease into the threaded insert.

Max. torque for all housings see chapter "*Technical data*".

Cable screening and grounding

If screened cable is necessary, we recommend connecting the cable screen on both ends to ground potential. In the VEGADIS 82, the screen should be connected directly to the internal ground terminal.



In Ex systems it must be ensured that the grounding complies with the installation regulations.

In electroplating and CCP systems (cathodic corrosion protection) it must be taken into account that significant potential differences exist. This can lead to unacceptably high currents in the cable screen if it is grounded at both ends.

5.2 Connection technology and steps

Connection technology

The voltage supply and signal output are connected via the spring-loaded terminals in the housing.

Connection to the display and adjustment module or to the interface adapter is carried out via contact pins in the housing.



Information:

The terminal block is pluggable and can be removed from the electronics. To do this, lift the terminal block with a small screwdriver and pull it out. When reinserting the terminal block, you should hear it snap in.

Connection procedure

Proceed as follows:

1. Unscrew the housing cover
2. If a display and adjustment module is installed, remove it by turning it slightly to the left.
3. Loosen compression nut of the cable entry gland
4. Remove approx. 10 cm (4 in) of the cable mantle, strip approx. 1 cm (0.4 in) of insulation from the ends of the individual wires
5. Insert the cable into the sensor through the cable entry

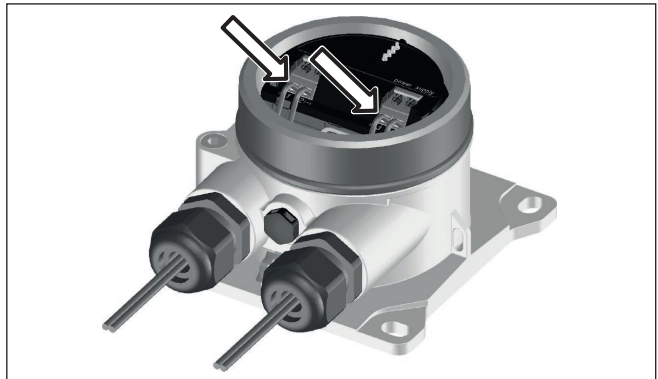


Fig. 8: Connection steps 5 and 6

6. Insert the wire ends into the terminals according to the wiring plan



Information:

Solid cores as well as flexible cores with wire end sleeves are inserted directly into the terminal openings. In case of flexible cores without end sleeves, press the terminal from above with a small screwdriver, the terminal opening is then free. When the screwdriver is released, the terminal closes again.

You can find further information on the max. wire cross-section under "*Technical data/Electromechanical data*"

7. Check the hold of the wires in the terminals by lightly pulling on them

8. Connect the screen to the internal ground terminal, connect the outer ground terminal to potential equalisation
9. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
10. Reinsert the display and adjustment module, if one was installed
11. Screw the housing cover back on

5.3 Wiring plan

Wiring plan 4 ... 20 mA

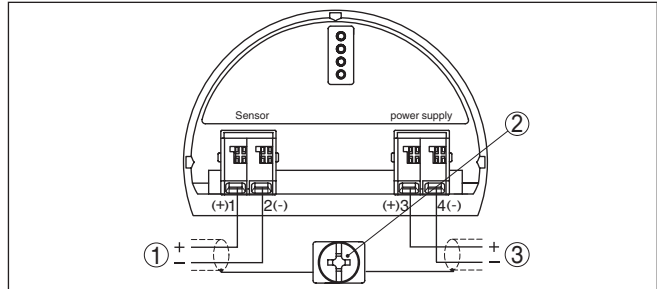


Fig. 9: Wiring plan VEGADIS 82 for 4 ... 20 mA sensors

- 1 To the sensor
- 2 Terminal for connection of the cable screen
- 3 For power supply

Wiring plan 4 ... 20 mA - panel mounting

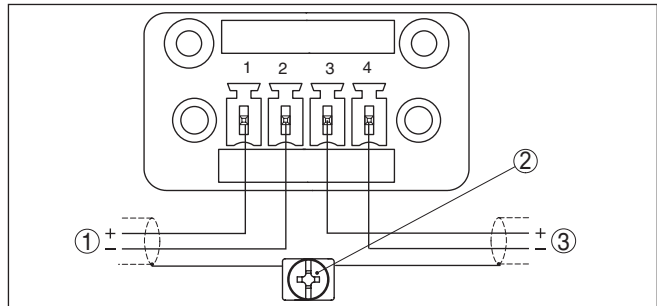


Fig. 10: Wiring plan VEGADIS 82 for 4 ... 20 mA sensors - panel mounting

- 1 To the sensor
- 2 Ground terminal in the switching cabinet for connection of the cable screen
- 3 For power supply

5.4 Connection signal conditioning instrument

The following illustrations show the simplified connection of VEGADIS 82 to a signal conditioning instrument VEGAMET or a four-wire sensor with active 4 ... 20 mA output.

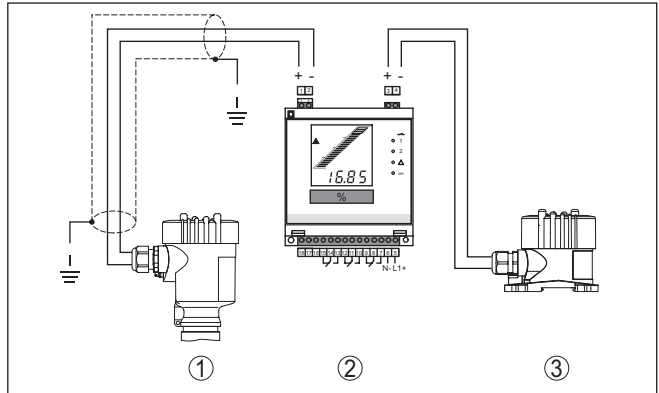


Fig. 11: Connection of the VEGADIS 82 as external indication to signal conditioning instrument or four-wire sensor

- 1 Sensor
- 2 Signal conditioning instrument
- 3 VEGADIS 82

For this, terminals 1 and 2 on VEGADIS 82 must be bridged.

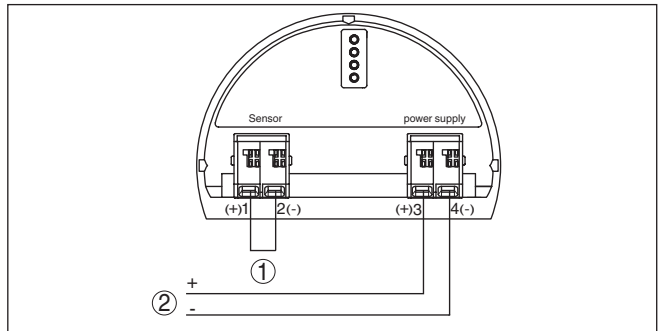


Fig. 12: Bridge on terminals 1 and 2 on the VEGADIS 82

- 1 Bridge
- 2 VEGADIS 82
- 3 Signal conditioning instrument

5.5 Connection example

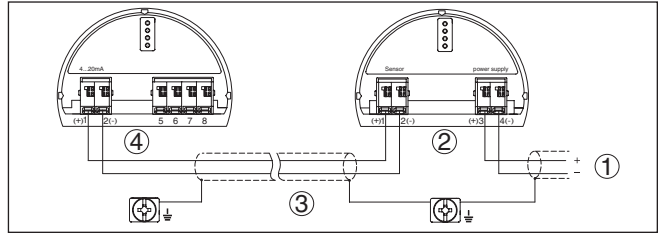


Fig. 13: Connection example 4 ... 20 mA

- 1 Voltage supply
- 2 VEGADIS 82
- 3 Connection cable
- 4 Sensor

5.6 Switch-on phase

After connecting the instrument to power supply or after a voltage recurrence, the instrument carries out a self-check for approx. 10 s:

- Internal check of the electronics
- Indication of the instrument type, hardware and software version, measurement loop name on the display or PC
- Indication of a status message on the display or PC

The duration of the warm-up phase depends on the connected sensor.

Then the actual measured value will be displayed. You can find further information of the presentation in chapter "Measured value indication - Start menu".

6 Set up with the display and adjustment module

Mount/Dismount display and adjustment module

6.1 Insert display and adjustment module

The display and adjustment module can be inserted into VEGADIS 82 and removed again at any time. It is not necessary to interrupt the power supply.

Proceed as follows for mounting the display and adjustment module:

1. Unscrew the housing cover
2. Place the display and adjustment module in the desired position on the electronics (you can choose any one of four different positions - each displaced by 90°)
3. Press the display and adjustment module onto the electronics and turn it to the right until it snaps in.
4. Screw housing cover with inspection window tightly back on

Disassembly is carried out in reverse order.

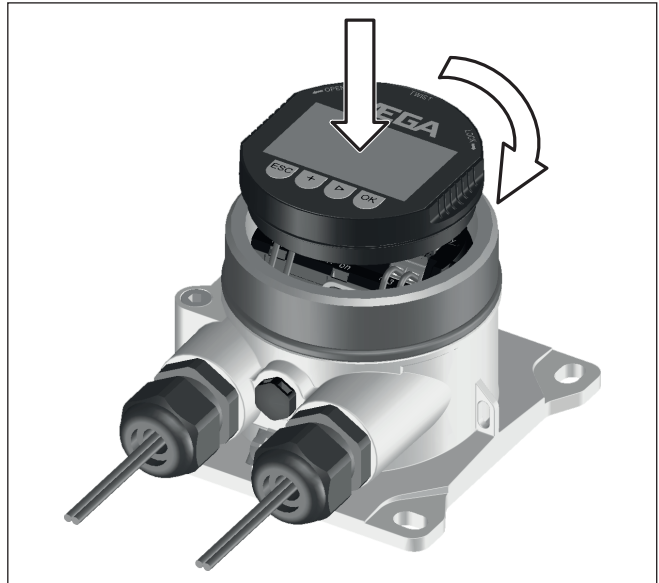


Fig. 14: Installation of the display and adjustment module

6.2 Adjustment system

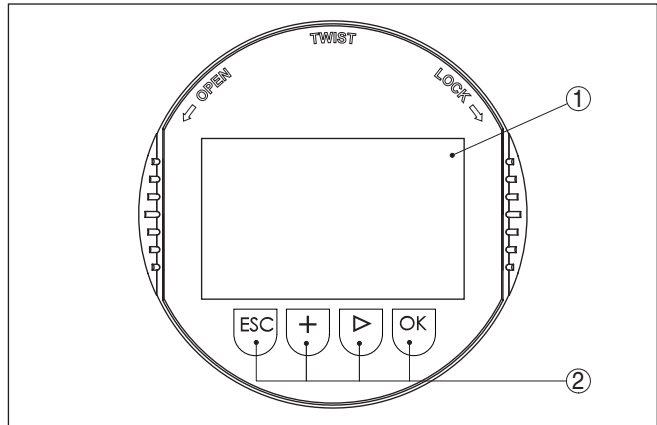


Fig. 15: Display and adjustment elements

- 1 LC display
- 2 Adjustment keys

Key functions

- **[OK]** key:
 - Move to the menu overview
 - Confirm selected menu
 - Edit parameter
 - Save value
- **[-]** key:
 - Presentation, change measured value
 - Select list entry
 - Select editing position
- **[+]** key:
 - Change value of the parameter
- **[ESC]** key:
 - Interrupt input
 - Jump to next higher menu

Adjustment system

The instrument is adjusted via the four keys of the display and adjustment module. The LC display indicates the individual menu items. The functions of the individual keys are shown in the above illustration. Approx. 60 minutes after the last pressing of a key, an automatic reset to measured value indication is triggered. Any values not confirmed with **[OK]** will not be saved.

6.3 Measured value indication - Selection national language

Measured value indication

With the **[->]** key you can move between two different views:

First view: Display value 1 in big lettering, TAG number

Second view: Display value 1, a bargraph corresponding to the 4 ... 20 mA value, TAG number



During the initial setup of an instrument shipped Ex works, use the "OK" key to get to the menu "National language".

Selection of national language

This menu item is used to select the national language for further parameter adjustment. You can change the selection via the menu item "Setup - Display, Menu language".

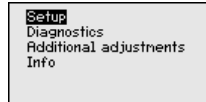


With the "OK" key you move to the main menu.

6.4 Parameter adjustment - VEGADIS 82

Main menu

The main menu is divided into four areas with the following functions:



Setup: Settings, e.g. to measurement loop name, damping, scaling

Diagnostics: Information on the device status

Additional adjustments: Reset, copy display settings

Info: Instrument name, instrument version, date of manufacture, instrument features

For optimum adjustment of the instrument, the individual submenu items should be selected one after the other in the main menu item "Setup" and provided with the correct parameter values.

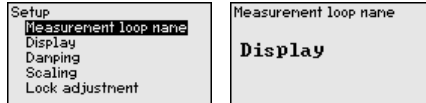
Setup - Measurement loop name

In the menu item "Measurement loop name" you edit a twelve digit measurement loop designation label.

You can enter an unambiguous designation for the measured value, e.g. the measurement loop name or the tank or product designation. In digital systems and in the documentation of larger plants, a singular designation must be entered for exact identification of individual measuring points.

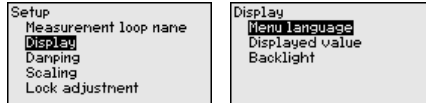
The character set comprises the following ASCII signs with extension according to ISO 8859-1:

- Letters from A ... Z
- Numbers from 0 ... 9
- Special characters such as +, -, /, - etc.



Setup - Display, menu language

This menu item allows a change of the national language.

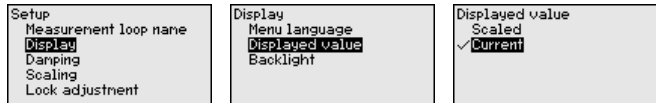


The following languages are available:

- German
- English
- French
- Spanish
- Russian
- Italian
- Dutch
- Portuguese
- Turkish
- Polish
- Czech

Setup - Display, indication value

In this menu item you can define the indication of the measured values on the display.



The default setting for the display value is "Current".

Setup - Display, lighting

The display and adjustment module has a backlight for the display. In this menu item you switch on the lighting. You can find the required operating voltage in chapter "Technical data".



The lighting is switched off in delivery status.



Note:

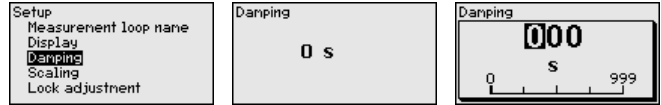
The lighting switches off automatically when the current in the signal circuit is lower than 4 mA.

It switches on automatically when the current in the signal circuit is 4 mA or higher.

Setup - Damping

To damp process-dependent measured value fluctuations, set an integration time of 0 ... 999 s in this menu item. The increment is 0.1 s.

The entered integration time influences the current value and the display. The HART value remains unaffected.

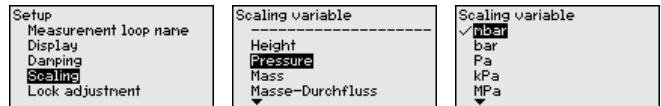


Factory setting is 0 s.

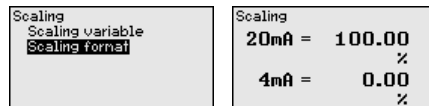
Setup - Scaling

In the menu item "Scaling variable" you define the scaling variable and unit of the measured value on the display, e.g. volume in l.

In addition to the offered standard units, there is the possibility, to create a user-defined unit.



Furthermore you define via the menu item "Scaling format" the position of the comma and the assignment of the measured value for 0 % and 100 %.



Lock/unlock setup - Adjustment

In the menu item "Lock/unlock adjustment", you can protect the instrument parameters against unauthorized modification. The PIN is activated/deactivated permanently.

The following adjustment functions are possible without entering the PIN:

- Select menu items and show data
- Read data from the sensor into the display and adjustment module.



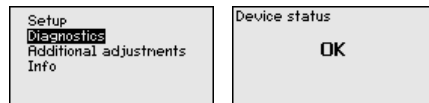
Caution:

With active PIN, adjustment via PACTware/DTM as well as other systems is also blocked.

The PIN number is entered while locking.

Diagnostics - Device status

In this menu item, the device status is displayed.



In case of instrument failure, an error code with text message is displayed. You can find information on cause and rectification in chapter "*Diagnosis and service*".

Additional adjustments - Reset

With a reset, certain parameter adjustments carried out by the user are reset.



The following table shows the default values of the instrument. Depending on the instrument version or application, all menu items may not be available or some may be differently assigned:

Reset - Setup

Menu item	Parameter	Default value
Measurement loop name		Display
Display	Language	English Order-specific
	Displayed value	Signal current
	Backlight	Switched off
Damping	Integration time	0 s
Scaling	Scaling size	%
	Scaling format	20 mA correspond to 100.00 % 4 mA correspond to 0.00 %
Lock adjustment		Released

Additional adjustments - Copy display settings

With this function, the following display settings are copied.

The following parameters or settings are saved:

- All parameters of the menu "*Setup*"



The copied data are permanently saved in the display and adjustment module. They remain even in case of voltage loss.

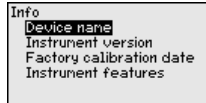


Note:

Before the data are stored in the instrument, they are checked to make sure they match the instrument. For this purpose, the instrument type of the source data as well as the target instrument are displayed. Storage takes place only after approval.

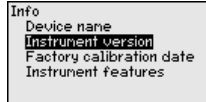
Info - Instrument name

In this menu item, you read out the instrument name and the instrument serial number:



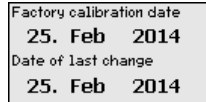
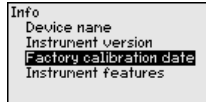
Info - Instrument version

In this menu item, the hardware and software version of the sensor is displayed.



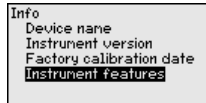
Info - Factory calibration date

In this menu item, the date of the factory calibration of the instrument as well as the date of the last change of sensor parameters is displayed via the PC.



Info - Instrument features

In this menu item, instrument features such as approvals, electronics, housing as well as others are displayed.



7 Setup with PACTware

7.1 Connect the PC

Via interface adapter

To set up the VEGADIS 82 with a PC and PACTware, the PC is connected via the interface adapter to the VEGADIS 82.

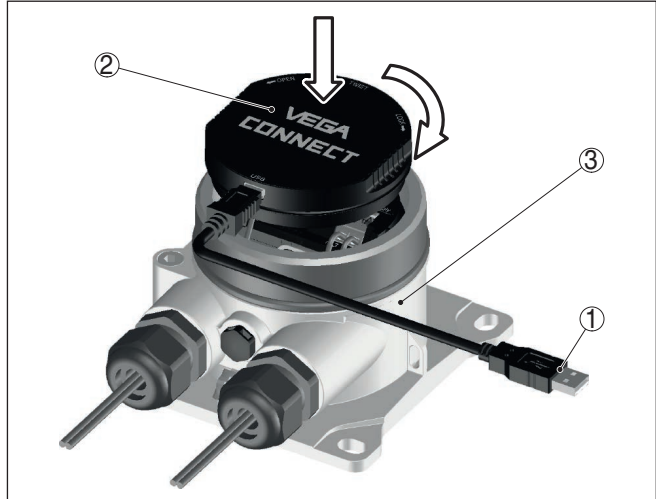


Fig. 16: Connection of the PC via interface adapter

- 1 USB cable to the PC
- 2 Interface adapter VEGACONNECT
- 3 VEGADIS 82

7.2 Parameter adjustment

Prerequisites

For parameter adjustment of the instrument via a Windows PC, the configuration software PACTware and a suitable instrument driver (DTM) according to FDT standard are required. The latest PACTware version as well as all available DTMs are compiled in a DTM Collection. The DTMs can also be integrated into other frame applications according to FDT standard.



Note:

To ensure that all instrument functions are supported, you should always use the latest DTM Collection. Furthermore, not all described functions are included in older firmware versions. You can download the latest instrument software from our homepage. A description of the update procedure is also available in the Internet.

Further setup steps are described in the operating instructions manual "DTM Collection/PACTware" attached to each DTM Collection and which can also be downloaded from the Internet. Detailed descriptions are available in the online help of PACTware and the DTMs.

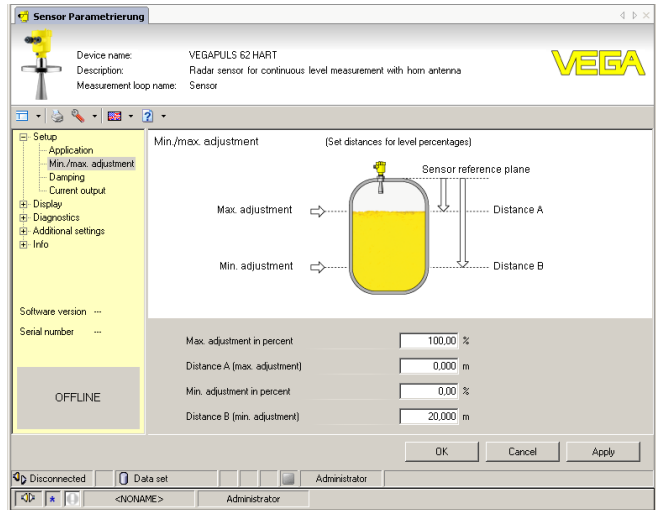


Fig. 17: Example of a DTM view

Standard/Full version

All device DTMs are available as a free-of-charge standard version and as a full version that must be purchased. In the standard version, all functions for complete setup are already included. An assistant for simple project configuration simplifies the adjustment considerably. Saving/printing the project as well as import/export functions are also part of the standard version.

In the full version there is also an extended print function for complete project documentation as well as a save function for measured value and echo curves. In addition, there is a tank calculation program as well as a multiviewer for display and analysis of the saved measured value and echo curves.

The standard version is available as a download under www.vega.com/downloads and "Software". The full version is available on CD from the agency serving you.

7.3 Saving the parameter adjustment data

We recommend documenting or saving the parameter adjustment data via PACTware. That way the data are available for multiple use or service purposes.

8 Diagnostics and service

8.1 Maintenance

If the device is used correctly, no maintenance is required in normal operation.

8.2 Asset Management function

Sensors

The instrument supports the self-monitoring and diagnosis of the connected sensor. Status or failure messages are displayed according to the sensor via display and adjustment module, PACTware/DTM and EDD.

You can find a detailed overview of this function in the operating instructions of the respective sensor.

VEGADIS 82

The following table shows the error codes and text messages of the VEGADIS 82 and gives information on the cause and removal.

Code Text message	Cause	Rectification
E003 CRC-error	– CRC error during self-check	– Carry out a reset – Send instrument for repair
E014 Sensor input: Short-circuit	– Short-circuit or sensor current > 21 mA	– Check cable – Check sensor
E015 Sensor input: Line break	– Line break or sensor current < 3.6 mA	– Check cable – Check sensor, probably already in the run-in period
E021 Scaling: Span too small	– Scaling span too small	– Carry out a fresh scaling, increase the distance between min. and max. scaling.
E022 Scaling: Value too high	– Scaling value too high	– Check scaling values and correct, if necessary
E034 EEPROM: CRC error	– EEPROM: CRC error	– Switch the instrument off and on – Carry out reset to default setting – Send instrument for repair
E035 ROM: CRC error	– ROM: CRC error	– Switch the instrument off and on – Carry out reset to default setting – Send instrument for repair

Code Text message	Cause	Rectification
E037 RAM defective	– Error of the RAM in the internal data memory	– Switch the instrument off and on – Carry out reset to default setting – Send instrument for repair
E040 General hardware error	– Hardware error	– Switch the instrument off and on – Carry out reset to default setting – Send instrument for repair

8.3 Rectify faults

Reaction when malfunctions occur

The operator of the system is responsible for taking suitable measures to rectify faults.

Check the 4 ... 20 mA signal

Connect a multimeter in the suitable measuring range according to the wiring plan. The following table describes possible errors in the current signal and helps to remove them:

Error	Cause	Rectification
4 ... 20 mA signal not stable	– Fluctuations of the measured variable	– Set damping according to the instrument via the display and adjustment module or PACTware/DTM
4 ... 20 mA signal missing	– Electrical connection faulty	– Check connection according to chapter "Connection steps" and if necessary, correct according to chapter "Wiring plan"
	– Voltage supply missing	– Check cables for breaks; repair if necessary
	– Operating voltage too low or load resistance too high	– Check, adapt if necessary
Current signal greater than 22 mA or less than 3.6 mA	– Electronics module in the sensor defective	– Exchange the instrument or send it in for repair

Reaction after fault rectification

Depending on the reason for the fault and the measures taken, the steps described in chapter "Setup" must be carried out again or must be checked for plausibility and completeness.

24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is also available outside normal working hours, seven days a week around the clock.

Since we offer this service worldwide, the support is provided in English. The service itself is free of charge, the only costs involved are the normal call charges.

8.4 Exchanging the electronics module

In case of a defect, the user can replace the electronics module with another one of identical type.



In Ex applications, only instruments and electronics modules with appropriate Ex approval may be used.

If there is no electronics module available on site, one can be ordered from the agency serving you.

8.5 Software update

The following components are required to update the instrument software:

- Instrument
- Voltage supply
- Interface adapter VEGACONNECT
- PC with PACTware
- Current instrument software as file

You can find the current instrument software as well as detailed information on the procedure under "www.vega.com/downloads" and "*Software*".



Caution:

Instruments with approvals can be bound to certain software versions. Therefore make sure that the approval is still effective after a software update is carried out.

You can find detailed information at www.vega.com/downloads and "*Approvals*".

8.6 How to proceed if a repair is needed

You can find a repair form as well as detailed information on how to proceed at www.vega.com/downloads and "*Forms and certificates*".

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

If a repair is necessary, please proceed as follows:

- 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 contact the agency serving you to get the address for the return shipment. You can find the agency on our home page www.vega.com.

9 Dismounting

9.1 Dismounting steps

**Warning:**

Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel or pipeline, 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.

9.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the parts 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 on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

10 Supplement

10.1 Technical data

Materials and weights

Materials

– Plastic housing	plastic PBT (Polyester)
– Aluminium housing	Aluminium die-casting AlSi10Mg, powder-coated - basis: Polyester
– Stainless steel housing	316L precision casting, blasted
– Seal between housing and housing cover	NBR (stainless steel housing), silicone (Alu/plastic housing)
– Inspection window in housing cover (in version with display and adjustment module)	Polycarbonate, coated
– Cable gland/Seal insert	PA/NBR
– Ground terminal	316L

Deviating materials - Ex-d version

– Inspection window in housing cover (in version with display and adjustment module)	Single-pane safety glass (ESG)
– Cable gland/Seal insert	Brass, nickel-plated/NBR

Material with carrier rail mounting

– Adapter plate, housing side	316
– Adapter plate, carrier rail side	Zinc die casting
– Mounting screws	316

Materials with tube mounting

– Brackets	StSt
– Mounting screws	StSt

Material with panel mounting

– Housing	PPE
– Transparent cover	PS
– Screw clamps	St, nickle plate

Weights without mounting elements approx.

– Plastic housing	0.35 kg (0.772 lbs)
– Aluminium housing	0.7 kg (1.543 lbs)
– Stainless steel housing	2.0 kg (4.409 lbs)

Torques

Max. torque for NPT cable glands and Conduit tubes

– Plastic housing	10 Nm (7.376 lbf ft)
– Aluminium/Stainless steel housing	50 Nm (36.88 lbf ft)

Signal and supply circuit

Voltage drop with current value 4 ... 20 mA

– Without lighting max.	1.7 V
– With lighting max.	3.2 V
Current range	3.5 ... 22.5 mA ¹⁾
Overcurrent resistance	100 mA
Fuse	Power supply side
Interpolation protection	Available

Current measurement (reference temperature 20 °C)

Measuring range loop current	3.5 ... 22.5 mA
Deviation	±0.1 % of 20 mA
Temperature coefficient	±0.1 % of the span/10 K
Interval	250 ms

Display and adjustment module

Display element	Display with backlight
Measured value indication	
– Number of digits	5
– Size of digits	W x H = 7 x 13 mm
Adjustment elements	4 keys
Protection rating	
– unassembled	IP 20
– mounted into the housing without cover	IP 40
Materials	
– Housing	ABS
– Inspection window	Polyester foil

Ambient conditions

Storage and transport temperature	-40 ... +80 °C (-40 ... +176 °F)
Ambient temperature	
– without display and adjustment module	-40 ... +80 °C (-40 ... +176 °F)
– With display and adjustment module	-15 ... +70 °C (+5 ... +158 °F)

Process conditions

Vibration resistance	4 g at 5 ... 200 Hz according to EN 60068-2-6 (vibration with resonance)
Vibration resistance with carrier rail mounting	1 g at 5 ... 200 Hz according to EN 60068-2-6 (vibration with resonance)

¹⁾ If the loop current is not sufficient for operation, the display remains dark. When the measured values are outside the measuring range, a message is displayed instead of the measured value.

Shock resistance 100 g, 6 ms according to EN 60068-2-27 (mechanical shock)

Electromechanical data

Options of the cable entry

- Cable entry M20 x 1.5, ½ NPT
- Cable gland M20 x 1,5; ½ NPT (cable ø see below table)
- Blind plug M20 x 1.5; ½ NPT
- Closing cap ½ NPT

Material cable gland	Material seal insert	Cable diameter			
		4 ... 8.5 mm	5 ... 9 mm	6 ... 12 mm	10 ... 14 mm
PA black	Neoprene (CR)	–	●	●	●
PA blue	Neoprene (CR)	–	●	–	–
Brass, nickel-plated	NBR	●	–	–	–
Stainless steel	NBR	–	–	●	–

Connection terminals

- Type Spring-loaded terminal
- Stripping length 8 mm

Wire cross-section of the connection cable (according to IEC 60228)

- Massive wire, cord 0.2 ... 2.5 mm² (AWG 24 ... 14)
- Stranded wire with end sleeve 0.2 ... 1.5 mm² (AWG 24 ... 16)

Electromechanical data - Panel mounting

Terminals, plug connector

- Type Spring-loaded terminal
- Stripping length 8 mm

Wire cross-section of the connection cable (according to IEC 60228)

- Massive wire, cord 0.2 ... 1.5 mm² (AWG 24 ... 16)
- Stranded wire with end sleeve 0.25 ... 0.75 mm² (AWG 24 ... 18)

Electrical protective measures

Protection rating

- Housing, plastic IP 66/IP 67, NEMA 4X/6P
- Housing, plastic - Panel mounting, assembled IP 40, NEMA 2
- Housing Aluminium, stainless steel IP 66/IP 68 (0.2 bar), NEMA 4X/6P

10.2 Dimensions

VEGADIS 82 - Plastic housing

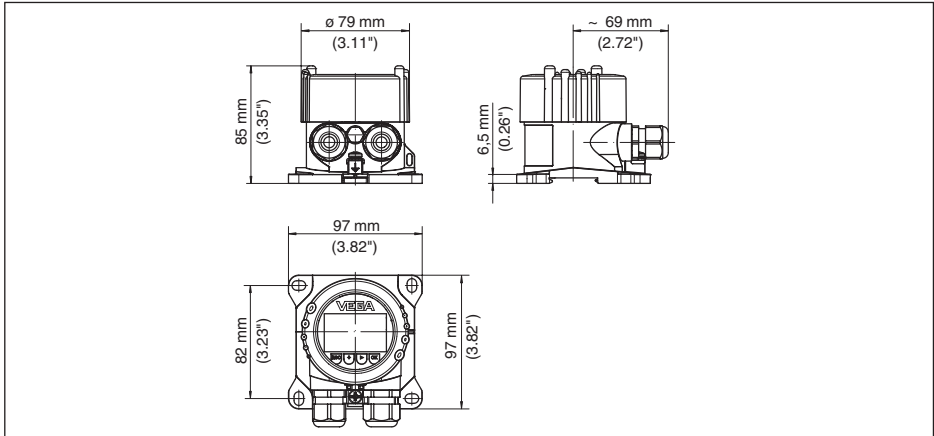


Fig. 18: VEGADIS 82 with plastic housing

VEGADIS 82 - Plastic housing - Panel mounting

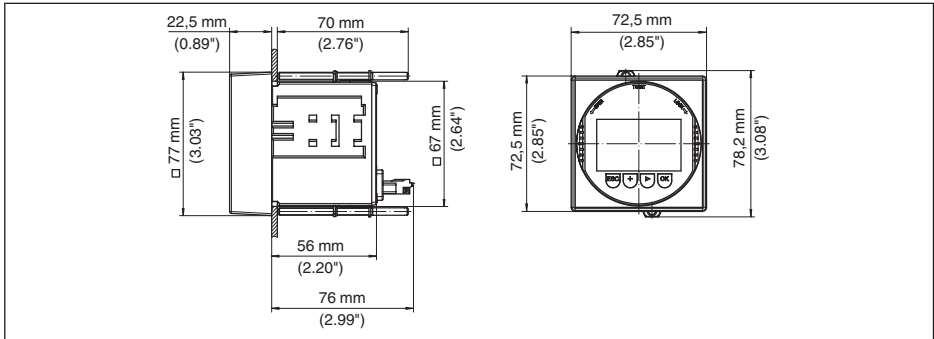


Fig. 19: VEGADIS 82 with plastic housing for panel mounting

VEGADIS 82 - Aluminium housing

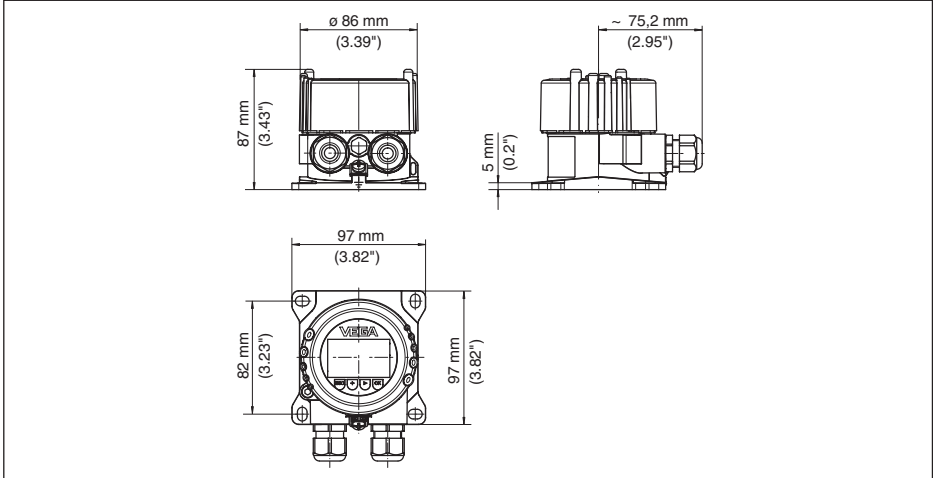


Fig. 20: VEGADIS 82 with Aluminium housing

VEGADIS 82 - Stainless steel, precision cast housing

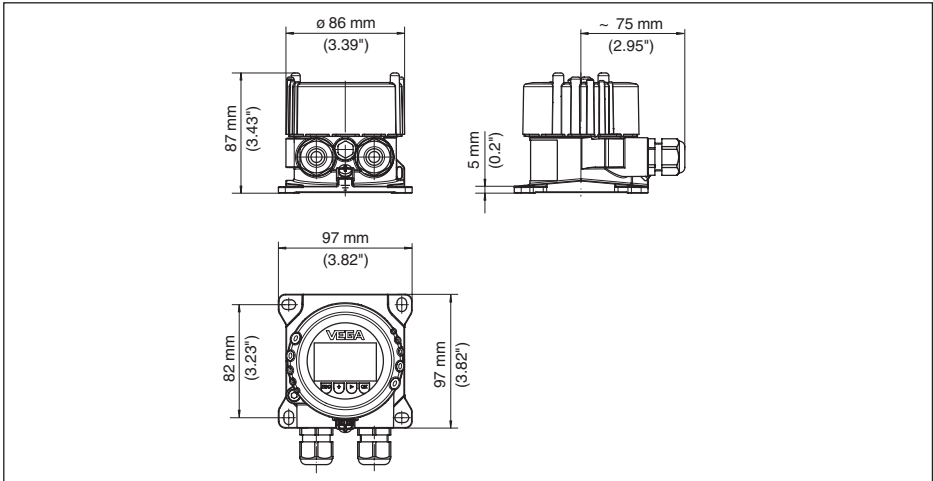


Fig. 21: VEGADIS 82 with stainless steel, precision cast housing

Mounting elements

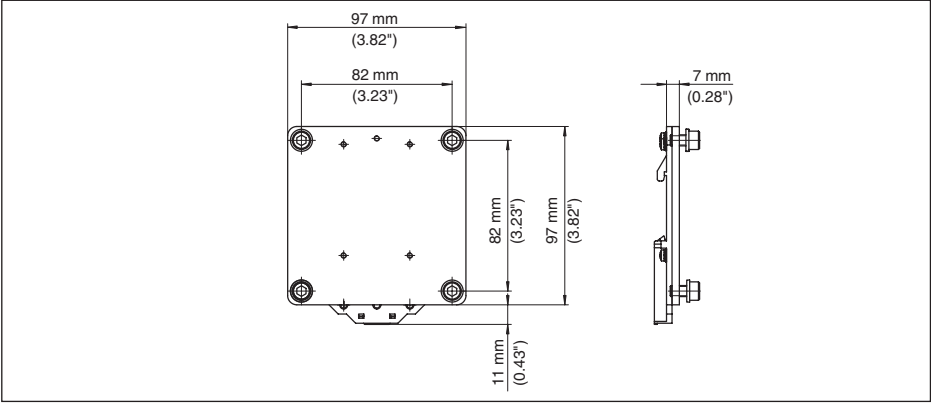


Fig. 22: Adapter plate for carrier rail mounting of VEGADIS 82

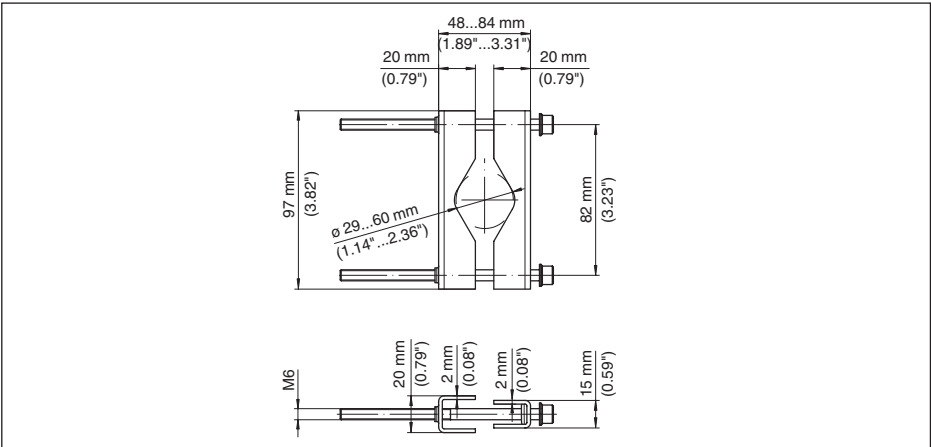


Fig. 23: Brackets for tube mounting of VEGADIS 82

10.3 Industrial property rights

VEGA product lines are global protected by industrial property rights. Further information see www.vega.com.

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

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Nähere Informationen unter www.vega.com.

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进一步信息请参见网站www.vega.com。

10.4 Trademark

All the brands as well as trade and company names used are property of their lawful proprietor/originator.

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Printing date:

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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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