

# Operating Instructions

External display and adjustment unit for  
plics® sensors

## VEGADIS 81



Document ID: 43814



**VEGA**

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**Safety instructions for Ex areas**

Take note of the Ex specific safety instructions for Ex applications. These instructions are attached as documents to each instrument with Ex approval and are part of the operating instructions manual.

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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, fault rectification, the exchange of parts and the safety of the user. 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

VEGADIS 81 is an external display and adjustment unit for plics® sensors.

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 this product can give rise to application-specific hazards, e.g. vessel overfill through incorrect mounting or adjustment. Damage to property and persons or environmental contamination can result. Also, the protective characteristics of the instrument can be impaired.

### 2.4 General safety instructions

This is a state-of-the-art instrument complying with all prevailing regulations and directives. 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. When measuring aggressive or corrosive media that can cause a dangerous situation if the instrument malfunctions, the operator has to implement suitable measures to make sure the instrument is functioning properly.

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. For safety

reasons, only the accessory specified by the manufacturer must be used.

To avoid any danger, the safety approval markings and safety tips on the device must also be observed and their meaning looked up in this operating instructions manual.

## 2.5 EU conformity

The device fulfils the legal requirements of the applicable EU directives. By affixing the CE marking, we confirm the conformity of the instrument with these directives.

You can find the EU conformity declaration on our website under [www.vega.com/downloads](http://www.vega.com/downloads).

## 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 fulfils the requirements of the following NAMUR recommendations:

- NE 21 – Electromagnetic compatibility of equipment
- NE 53 – Compatibility of field devices and display/adjustment components

For further information see [www.namur.de](http://www.namur.de).

## 2.7 Installation and operation in the USA and Canada

This information is only valid for USA and Canada. Hence the following text is only available in the English language.

Installations in the US shall comply with the relevant requirements of the National Electrical Code (ANSI/NFPA 70).

Installations in Canada shall comply with the relevant requirements of the Canadian Electrical Code

## 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

##### Type label

The type label 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 Order number
- 7 Identification code
- 8 Serial number of the instrument
- 9 Reminder to observe the instrument documentation
- 10 ID number, instrument documentation
- 11 Device protection class

##### 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](http://www.vega.com)", "*Instrument search (serial number)*". 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 81 is available in different housing materials, see chapter "*Technical data*".

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

As an option, the display and adjustment module comes equipped with a Bluetooth function. On this version, the keys can also be operated with a magnetic pen.

The display and adjustment module can be optionally equipped with heating to ensure good readability at low temperatures down to  $-40\text{ }^{\circ}\text{C}$  ( $-40\text{ }^{\circ}\text{F}$ ).

### Scope of delivery

The scope of delivery encompasses:

- Display and adjustment unit VEGADIS 81
- Unassembled cable gland M20 x 1 for the sensor
- Documentation
  - This operating instructions manual
  - Operating instructions manual 27835 "Display and adjustment module PLICSCOM" (optional)
  - Ex-specific "Safety instructions" (with Ex versions)
  - If necessary, further certificates

## 3.2 Principle of operation

### Application area

VEGADIS 81 is an external, digital display and adjustment unit for all plics® sensors.

The instrument is mounted in an easily accessible position up to 50 m away from the sensor. It is directly connected to the sensor electronics and also powered by it.

### Sensor adjustment

Measured value indication and sensor adjustment are carried out via the display and adjustment module integrated in VEGADIS 81.

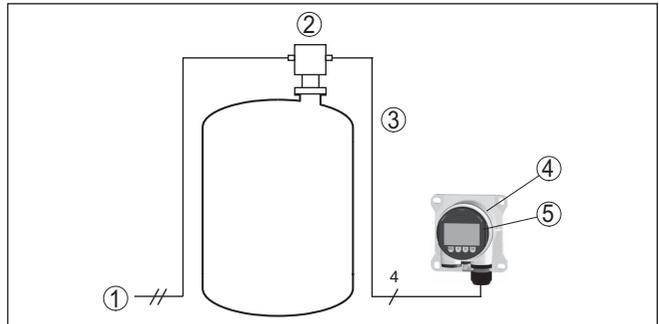


Fig. 2: Connection of VEGADIS 81 to the sensor

- 1 Voltage supply/Signal output sensor
- 2 Sensor
- 3 Connection cable, sensor - VEGADIS 81
- 4 VEGADIS 81
- 5 Display and adjustment module

### Sensor adjustment - VEGADIS 81 with heating

Measured value indication and sensor adjustment are carried out via the display and adjustment module integrated in VEGADIS 81.

Due to the low ambient temperatures, the version with heated display and adjustment module is selected for this example.

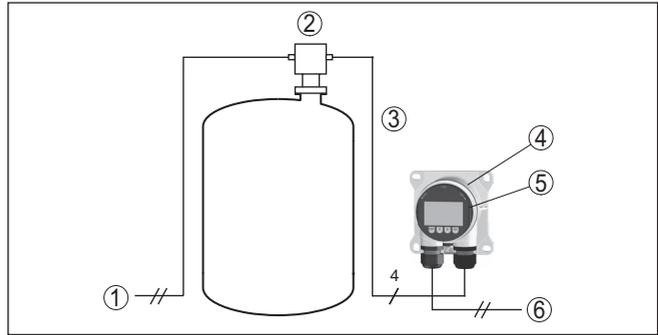


Fig. 3: Connection of VEGADIS 81 with heating to the sensor

- 1 Voltage supply/Signal output sensor
- 2 Sensor
- 3 Connection cable, sensor - VEGADIS 81
- 4 VEGADIS 81 with integrated heating
- 5 Display and adjustment module
- 6 Voltage supply, heating

**Wireless sensor adjustment**

Measured value indication and sensor adjustment are carried out via smartphone/tablet through the display and adjustment module with optional Bluetooth function integrated in VEGADIS 81.

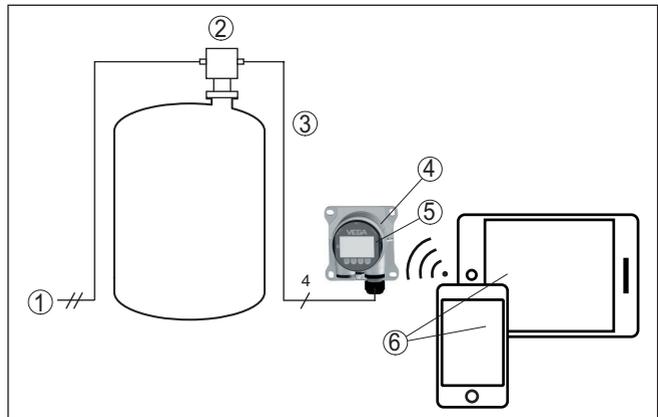


Fig. 4: Connection of VEGADIS 81 to the sensor

- 1 Voltage supply/Signal output sensor
- 2 Sensor
- 3 Connection cable, sensor - VEGADIS 81
- 4 Display and adjustment module
- 5 VEGADIS 81
- 6 Smartphone/Tablet

**Sensor adjustment via PC with PACTware**

The sensor adjustment is carried out via the VEGADIS 81, the VEGACONNECT as well as a PC with PACTware.

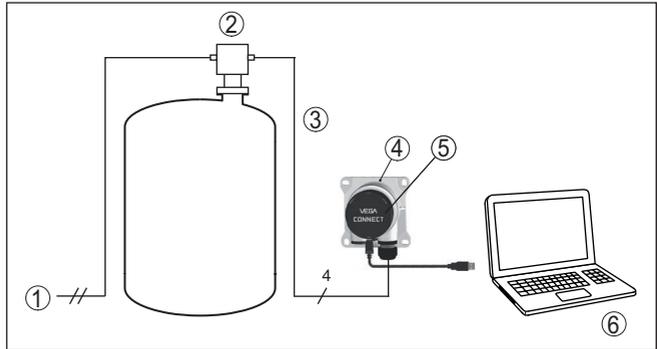


Fig. 5: Connection of VEGADIS 81 to the sensor and the PC

- 1 Voltage supply/Signal output sensor
- 2 Sensor
- 3 Connection cable VEGADIS 81 - Sensor
- 4 VEGADIS 81
- 5 VEGACONNECT
- 6 PC with PACTware/DTM

### Wireless sensor adjustment via PC with PACTware

The wireless sensor adjustment is carried out via a PC with PACTware/DTM and Bluetooth USB adapter.

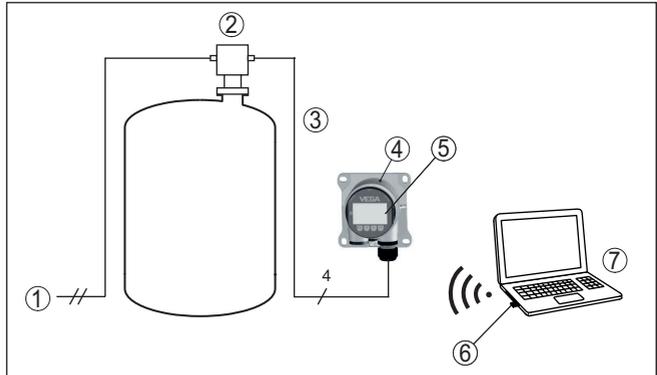


Fig. 6: Connection of VEGADIS 81 with Bluetooth to the sensor and connection to the PC

- 1 Voltage supply/Signal output sensor
- 2 Sensor
- 3 Connection cable VEGADIS 81 - Sensor
- 4 VEGADIS 81
- 5 VEGACONNECT
- 6 Bluetooth USB adapter
- 7 PC with PACTware/DTM

### 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**

- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 ... 85 %

**Lifting and carrying**

With an instrument weight of more than 18 kg (39.68 lbs) suitable and approved equipment must be used for lifting and carrying.

### 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.

The integrated Bluetooth module (optional) enables wireless adjustment via standard adjustment devices:<sup>1)</sup>

- Smartphone/tablet (iOS or Android operating system)
- PC/notebook with Bluetooth USB adapter (Windows operating system)

You can find further information in the operating instructions "*Display and adjustment module PLICSCOM*" (Document-ID 36433).

<sup>1)</sup> Bluetooth function with VEGADIS 82 can only be used at a later date.

## 4 Mounting

### 4.1 General instructions

#### Installation position

VEGADIS 81 functions in any installation position.

#### Protection against moisture

Protect your instrument against moisture ingress through the following measures:

- Use the recommended cable (see chapter "Connecting to power supply")
- Tighten the cable gland
- When mounting horizontally, turn the housing so that the cable gland points downward
- Loop the connection cable downward in front of the cable gland

This applies mainly to outdoor installations, in areas where high humidity is expected (e.g. through cleaning processes) and on cooled or heated vessels.

To maintain the housing protection, make sure that the housing lid is closed during operation and locked, if necessary.

Make sure that the degree of contamination specified in chapter "Technical data" meets the existing ambient conditions.

### 4.2 Mounting instructions

#### Wall mounting

The VEGADIS 81 in all available housing materials is suitable for wall mounting.

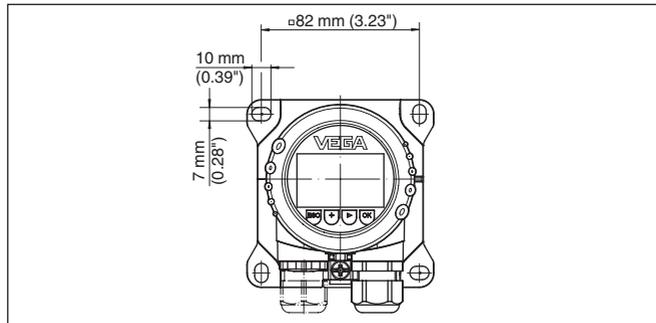


Fig. 7: Drilling dimensions for VEGADIS 81 for wall mounting

#### Carrier rail mounting

The VEGADIS 81 with plastic housing is suitable for direct carrier rail mounting according to EN 50022.

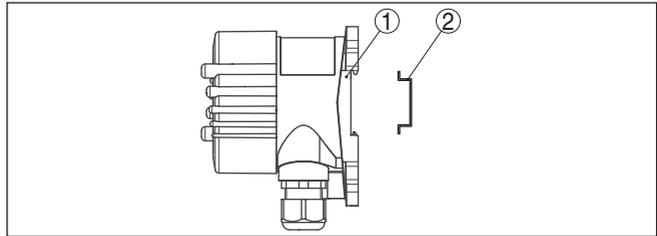


Fig. 8: VEGADIS 81 with plastic housing for carrier rail mounting

- 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 M6 x 12.

The adapter plate is screwed to the base of VEGADIS 81 by the user.

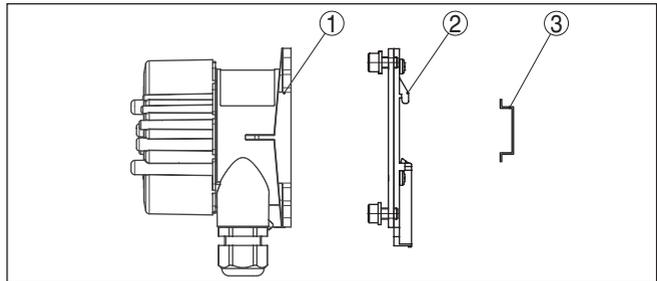


Fig. 9: VEGADIS 81 with aluminium and stainless steel housing for carrier rail mounting

- 1 Base
- 2 Adapter plate with screws M6 x 12
- 3 Carrier rail

**Tube mounting**

The VEGADIS 81 for tube mounting is supplied with unassembled mounting accessories. The kit consists of two pairs of mounting brackets and four mounting screws M6 x 100.

The mounting brackets are screwed to the base of VEGADIS 81 by the user.

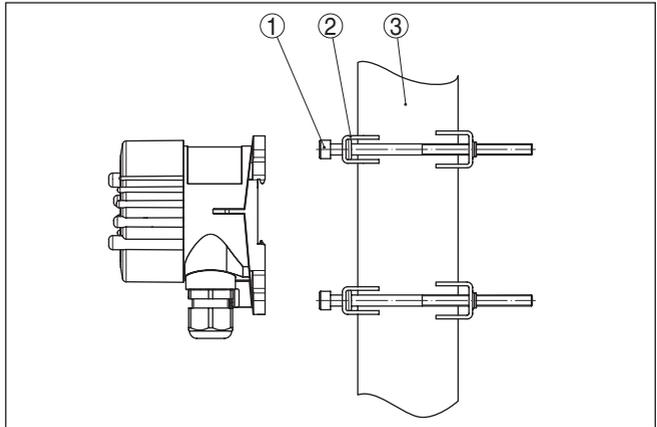


Fig. 10: VEGADIS 81 for tube mounting

- 1 4 screws M6 x 100
- 2 Mounting brackets
- 3 Tube (diameter 1" to 2")

## 5 Connecting to the sensor

### 5.1 Preparing the connection

#### Safety instructions

Always keep in mind the following safety instructions:



**Warning:**

Connect only in the complete absence of line voltage.

- The electrical connection must only be carried out by trained personnel authorised by the plant operator.
- If overvoltage surges are expected, overvoltage arresters should be installed.

#### Connection cable - 4 ... 20 mA/HART sensor

The VEGADIS 81 is connected with standard four-wire cable to the sensor. Depending on the sensor version, screened cable will be necessary. You can find appropriate information in the operating instructions of the respective sensor.



**Note:**

You can find a suitable, assembled connection cable with socket M12 x 1 in our product program.

#### Connection cable - PA/FF sensor

VEGADIS 81 is connected to the sensor with a screened four-wire cable up to 25 m long. This cable is absolutely necessary for the reliable function of VEGADIS 81 as well as the sensor.



**Note:**

You can find this cable with socket M12 x 1 and unassembled M12 x 1 plug connection for the sensor housing as PA/FF adapter kit in our product program.

#### Cable screening and grounding

##### 4 ... 20 mA/HART sensor

If screened cable is required, connect with 4 ... 20 mA/HART sensors the cable screen on both ends to ground potential. In VEGADIS 81 and in the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the respective housing must be connected to the potential equalisation (low impedance).

##### PA/FF sensor

Connect with PA/FF sensors the cable screen of the special cable only on one side in the sensor to ground potential. For this, the screen is directly connected in the sensor to the internal ground terminal through the plug connection. The ground terminal on the outside of the housing must be connected to potential equalization (low impedance).

### 5.2 Connection procedure

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.

#### Connection technology

**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 lid
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 gland and remove blind plug
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. 11: 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 external 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 lid back on

### 5.3 Wiring plan

#### Electronics and terminal compartment

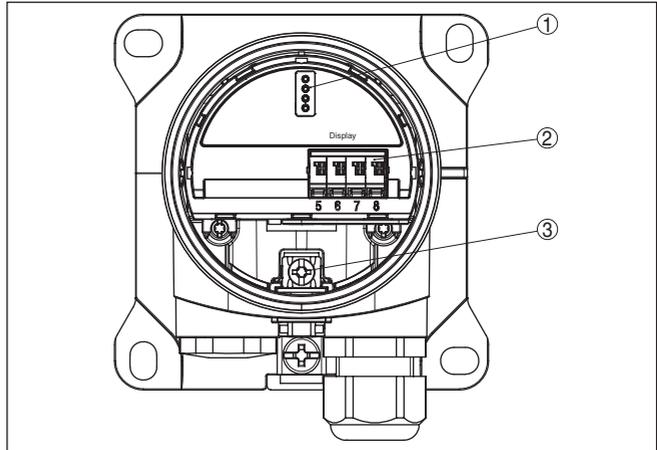


Fig. 12: Electronics and terminal compartment VEGADIS 81

- 1 Contact pins for the display and adjustment module
- 2 Spring-loaded terminals for connection of the sensor
- 3 Ground terminal for connection of the cable screen

### Electronics and terminal compartment - with heating

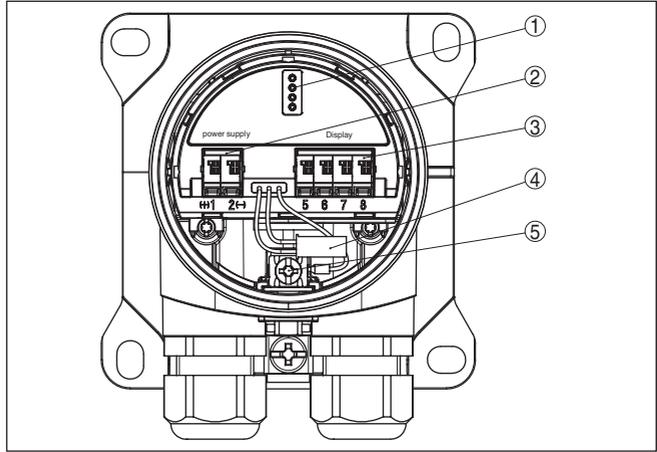


Fig. 13: Electronics and terminal compartment - VEGADIS 81 with heating

- 1 Contact pins for the display and adjustment module
- 2 Spring-loaded terminals for connection of the voltage supply for the heating
- 3 Spring-loaded terminals for connection of the sensor
- 4 Plug connector to the heated display and adjustment module
- 5 Ground terminal for connection of the cable screen

### Wiring plan 4 ... 20 mA/ HART

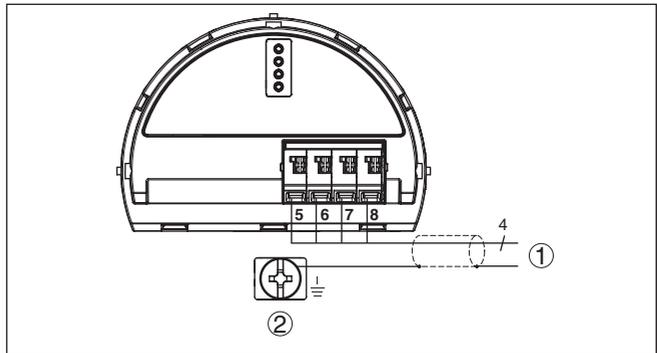


Fig. 14: Wiring plan VEGADIS 81 for 4 ... 20 mA/HART sensors

- 1 To the sensor
- 2 Ground terminal for connection of the cable screen<sup>2)</sup>

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

**Wiring plan 4 ... 20 mA/  
HART with heating**

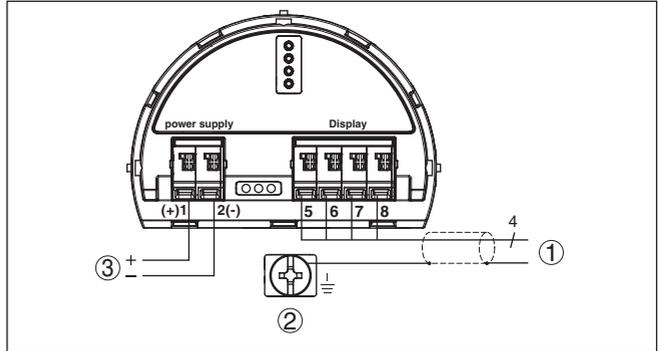


Fig. 15: Wiring plan VEGADIS 81 for 4 ... 20 mA/HART sensors, display and adjustment module with heating

- 1 To the sensor
- 2 Ground terminal for connection of the cable screen<sup>3)</sup>
- 3 Voltage supply for the heating

**Wiring plan PA/FF**

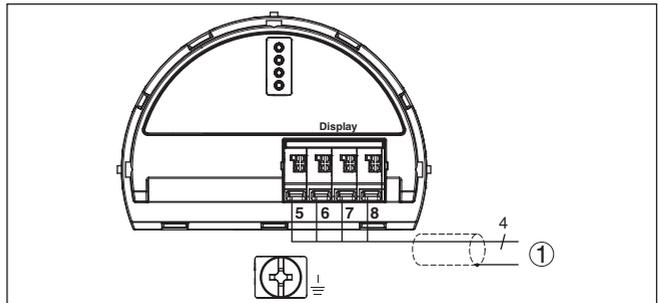


Fig. 16: Wiring plan VEGADIS 81 for PA/FF sensors

- 1 To the sensor

<sup>3)</sup> Connect screen here. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.

**Wiring plan PA/FF with heating**

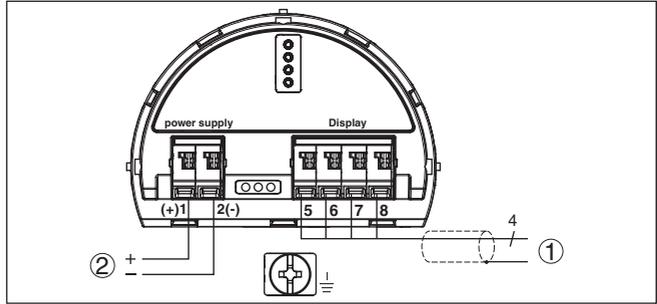


Fig. 17: Wiring plan VEGADIS 81 for PA/FF sensors, display and adjustment module with heating

- 1 To the sensor
- 2 Voltage supply for the heating

**5.4 Connection examples 4 ... 20 mA/HART**

**Connection via standard cable**

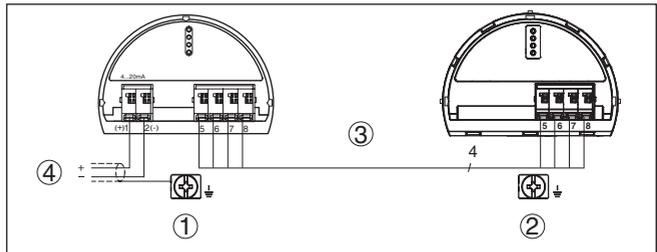


Fig. 18: Connection example 4 ... 20 mA/HART - connection via standard cable

- 1 Sensor
- 2 VEGADIS 81
- 3 Connection cable
- 4 Supply and signal circuit, sensor

**Connection via standard cable - screened**

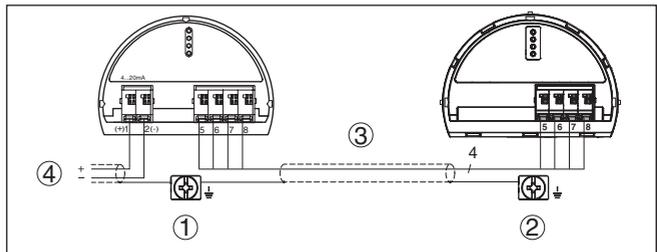


Fig. 19: Connection example 4 ... 20 mA/HART - connection via standard cable - screened

- 1 Sensor
- 2 VEGADIS 81
- 3 Connection cable
- 4 Supply and signal circuit, sensor

The connection between VEGADIS 81 and sensor is made with a standard cable according to the table.

VEGADIS 81	Sensor
Terminal 5	Terminal 5
Terminal 6	Terminal 6
Terminal 7	Terminal 7
Terminal 8	Terminal 8

**Connection via M12 x 1 plug connector and ready-made cable**

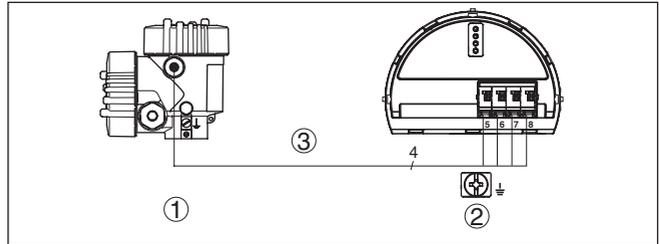


Fig. 20: Connection example 4 ... 20 mA/HART - connection via M12 plug connector and ready-made cable

- 1 Sensor
- 2 VEGADIS 81
- 3 Connection cable

Connection between VEGADIS 81 and sensor with 4-pole plug M12 x 1 is carried out according to the following table. The specification of the wire colours refers to the pre-confectioned cable from our product line.<sup>4)</sup>

Wire colour	VEGADIS 81
Brown	Terminal 5
White	Terminal 6
Blue	Terminal 7
Black	Terminal 8

<sup>4)</sup> Plug M12 x 1, optionally on the sensor housing

## 5.5 Connection examples Profibus PA, Foundation Fieldbus

Connection via M12 x 1 plug connector and ready-made special cable

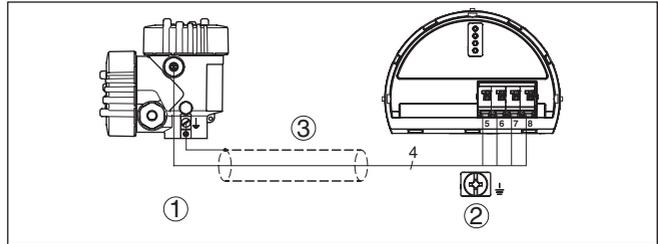


Fig. 21: Connection example Profibus PA, Foundation Fieldbus - Connection via M12 plug connector and open cable end

- 1 Sensor
- 2 VEGADIS 81
- 3 Connection cable

Connection between VEGADIS 81 and sensor with 4-pole plug M12 x 1 is carried out according to the following table. The specification of the wire colours refers to the pre-confected special cable from our product line.

Wire colour	VEGADIS 81
Black	Terminal 5
White	Terminal 6
Blue	Terminal 7
Brown	Terminal 8

## 6 Set up with the display and adjustment module

### Function/Configuration

### 6.1 Short description

The display and adjustment module is used for measured value display, adjustment and diagnosis. It can be mounted in the following housing versions and instruments:

- All continuously measuring sensors in single as well as double chamber housing version (optionally in the electronics or terminal compartment)
- External display and adjustment unit



#### Note:

You can find detailed information on adjustment in the operating instructions manual "*Display and adjustment module*".

### Mount/dismount display and adjustment module

### 6.2 Insert display and adjustment module

The display and adjustment module can be inserted into VEGADIS 81 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 lid
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 lid with inspection window tightly back on

Disassembly is carried out in reverse order.

The display and adjustment module is powered by the sensor, an additional connection is not necessary.



Fig. 22: Mounting of the display and adjustment module

### 6.3 Adjustment system

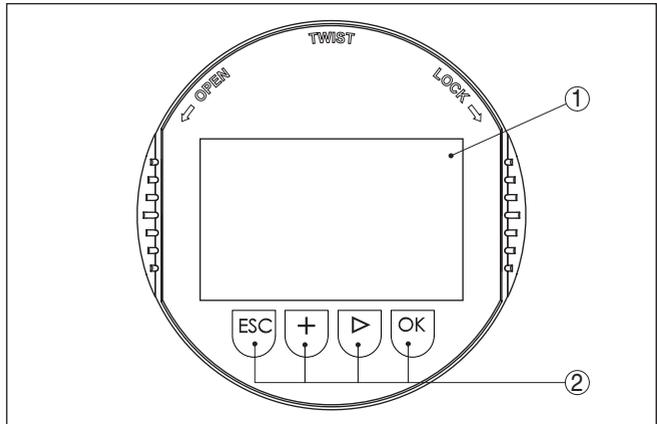


Fig. 23: Display and adjustment elements

- 1 LC display
- 2 Adjustment keys

#### Key functions

- **[OK]** key:
  - Move to the menu overview
  - Confirm selected menu
  - Edit parameter
  - Save value
- **[>]** key:

- Change measured value presentation
- Select list entry
- Select menu items in the quick setup menu
- Select editing position
- **[+]** key:
  - Change value of the parameter
- **[ESC]** key:
  - Interrupt input
  - Jump to next higher menu

**Operating system - Keys direct**

The instrument is operated via the four keys of the display and adjustment module. The individual menu items are shown on the LC display. You can find the function of the individual keys in the previous illustration.

**Adjustment system - keys via magnetic pen**

With the Bluetooth version of the display and adjustment module you can also adjust the instrument with the magnetic pen. The pen operates the four keys of the display and adjustment module right through the closed lid (with inspection window) of the sensor housing.

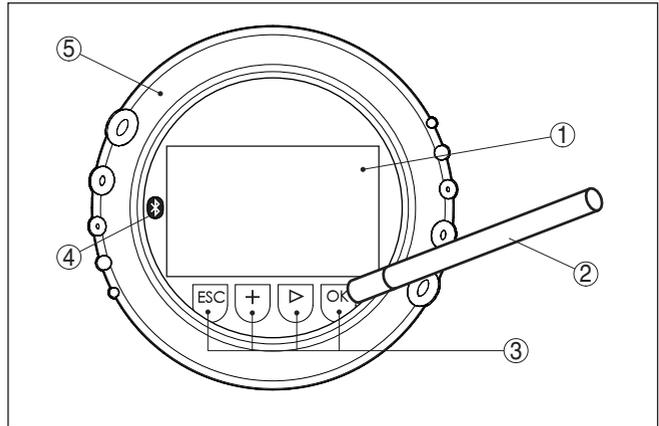


Fig. 24: Display and adjustment elements - with adjustment via magnetic pen  
 1 LC display  
 2 Magnetic pen  
 3 Adjustment keys  
 4 Bluetooth symbol  
 5 Lid with inspection window

**Time functions**

When the **[+]** and **[>]** keys are pressed quickly, the edited value, or the cursor, changes one value or position at a time. If the key is pressed longer than 1 s, the value or position changes continuously.

When the **[OK]** and **[ESC]** keys are pressed simultaneously for more than 5 s, the display returns to the main menu. The menu language is then switched over to "English".

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.

## 7 Setup via PACTware

### 7.1 Connect the PC

#### Via the interface adapter on VEGADIS 81

The PC is connected via the interface adapter VEGACONNECT to VEGADIS 81.

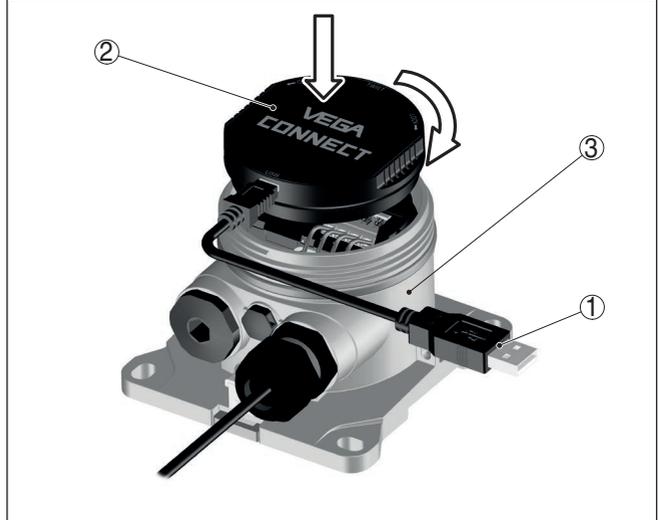


Fig. 25: Connection of the PC via interface adapter

- 1 USB cable to the PC
- 2 Interface adapter VEGACONNECT
- 3 VEGADIS 81

#### Wirelessly via Bluetooth USB adapter

The wireless connection from the PC to the VEGADIS 81 and sensor is carried out via the Bluetooth USB adapter and a display and adjustment module with integrated Bluetooth function.



Fig. 26: Connection of the PC via Bluetooth USB adapter

- 1 Display and adjustment module
- 2 VEGADIS 81
- 3 Bluetooth USB adapter
- 4 PC

## 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.

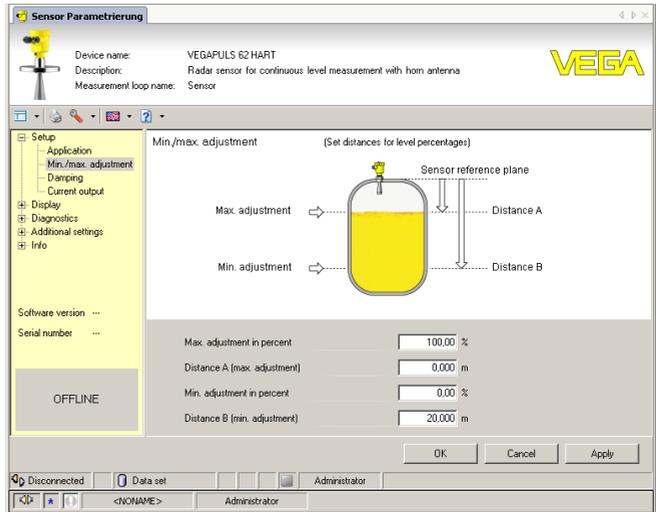


Fig. 27: Example of a DTM view

**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](http://www.vega.com/downloads) and "Software". The full version is available on CD from the agency serving you.

**7.3 Saving the parameterisation data**

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

## 8 Setup via app

### Connecting

### 8.1 Connect with smartphone/tablet

The display and adjustment module with integrated Bluetooth functionality allows connection of the VEGADIS 81 to smartphones/tablets with iOS or Android operating system.

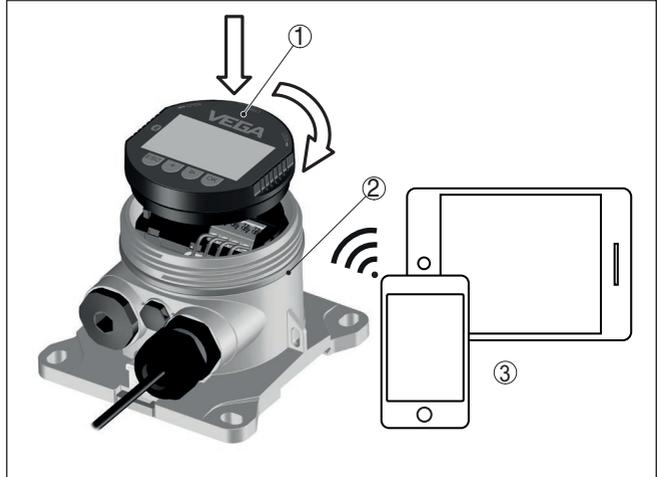


Fig. 28: Connection of VEGADIS 81 via PLICSCOM with Bluetooth to smartphone/tablet

- 1 PLICSCOM with Bluetooth
- 2 VEGADIS 81
- 3 Bluetooth USB adapter
- 4 Smartphone/Tablet

### Prerequisites

### 8.2 Parameter adjustment

For parameter adjustment of the instrument via smartphone/tablet, the "VEGA Tools" app is required. The app is available in the Apple or Google Play Store, depending on the operating system iOS or Android.

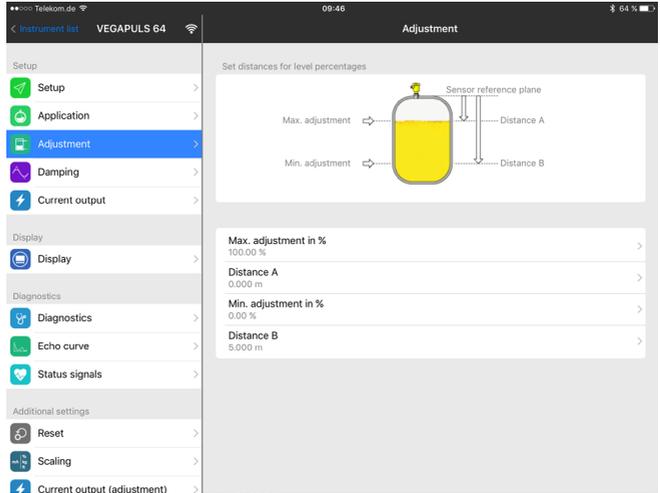


Fig. 29: Example of an app view for sensor adjustment

## 9 Maintenance and fault rectification

### 9.1 Maintenance

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

### 9.2 Rectify faults

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

#### Reaction when malfunction occurs

#### 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.

#### 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.

### 9.3 How to proceed if a repair is necessary

You can find an instrument return form as well as detailed information about the procedure in the download area of our homepage: [www.vega.com](http://www.vega.com).

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](http://www.vega.com).

## 10 Dismount

### 10.1 Dismounting steps

**Warning:**

Before dismantling, 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.

### 10.2 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.

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.

**WEEE directive 2012/19/EU**

This instrument is not subject to the WEEE directive 2012/19/EU 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.

## 11 Supplement

### 11.1 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 lid   | NBR (stainless steel housing), silicone (Aluminium/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 |
| – Cable gland/Seal insert  | Brass nickel-plated/NBR  |

##### Materials for carrier rail mounting

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

##### Materials for tube mounting

- |                   |      |
|-------------------|------|
| – Brackets        | StSt |
| – Mounting screws | StSt |

##### Materials for panel mounting

- |                     |                   |
|---------------------|-------------------|
| – Housing           | PPE               |
| – Transparent cover | PS                |
| – Screw clamps      | St, nickel plated |

##### 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)  |

##### Mounting elements approx.

- |   |                    |
|---|--------------------|
| – Brackets for tube mounting              | 0.4 kg (0.882 lbs) |
| – Adapter plate for carrier rail mounting | 0.5 kg (1.102 lbs) |

#### 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 -20 ... +70 °C (-4 ... +158 °F)
- With heated display and adjustment module -40 ... +70 °C (-40 ... +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)
- 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
- Blind plug M20 x 1.5; ½ NPT
- Closing cap ½ NPT

**Connection terminals**

- Type Spring-loaded terminal
- Stripping length 8 mm

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

- Massive wire, stranded wire 0.2 ... 2.5 mm<sup>2</sup> (AWG 24 ... 14)
- Stranded wire with end sleeve 0.2 ... 1.5 mm<sup>2</sup> (AWG 24 ... 16)

---

**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 *[OK], [->], [+], [ESC]*
- Switch Bluetooth On/Off

**Bluetooth interface**

- Standard Bluetooth smart
- Effective range 25 m (82.02 ft)

**Protection rating**

- unassembled IP 20
- mounted in the housing without lid IP 40

**Materials**

- Housing	ABS
- Inspection window	Polyester foil
Functional safety	SIL non-reactive

**Interface to the sensor**

Data transmission	Digital (I <sup>2</sup> C-Bus)
Configuration, connection cable	Four-wire, depending on the sensor version, screened
Cable length see following table	

Measuring principle	Version	Max. cable length
Radar	Hardware ≥ 1.0.0, Software ≥ 1.1.0	50 m/164.0 ft
	Hardware ≥ 2.0.0, Software ≥ 4.0.0	
Guided radar, pressure transmitter	Hardware ≥ 1.0.0, Software ≥ 1.0.0	
Radiometry	All hardware and software versions	
Radar, ultrasonic sensors, capacitive sensors, pressure transmitters	Hardware < 2.0.0, Software ≤ 3.99	25 m/82.02
All sensors	Signal output Profibus PA or Foundation Fieldbus	

Functional safety	SIL non-reactive
-------------------	------------------

**Voltage supply, heating**

## Operating voltage

- Type	Reliably separated extra low voltage according to VDE 0106 part 10
- Voltage level	24 V DC +5 %

Reverse voltage protection	Integrated
----------------------------	------------

Max. power consumption	1.7 W
------------------------	-------

## Switching reaction

- Heating on	< -5 °C (23°F)
- Heating off	> 0 °C (32 °F)

**Electrical protective measures**

## Protection rating

- Housing, plastic	IEC 60529 IP 66/IP 67, NEMA Type 4X
- Housing Aluminium, stainless steel	IEC 60529 IP 66/IP 68 (0.2 bar), NEMA Type 6P

## Altitude above sea level

- by default	up to 2000 m (6562 ft)
- with connected overvoltage protection	up to 5000 m (16404 ft)

Pollution degree <sup>5)</sup>	4
--------------------------------	---

<sup>5)</sup> When used with fulfilled housing protection

**Approvals**

Instruments with approvals can have different technical specifications depending on the version.

For that reason the associated approval documents of these instruments have to be carefully noted. They are part of the delivery or can be downloaded under [www.vega.com](http://www.vega.com), "Instrument search (serial number)" as well as in the download area.

**11.2 Dimensions**

**VEGADIS 81, plastic housing**

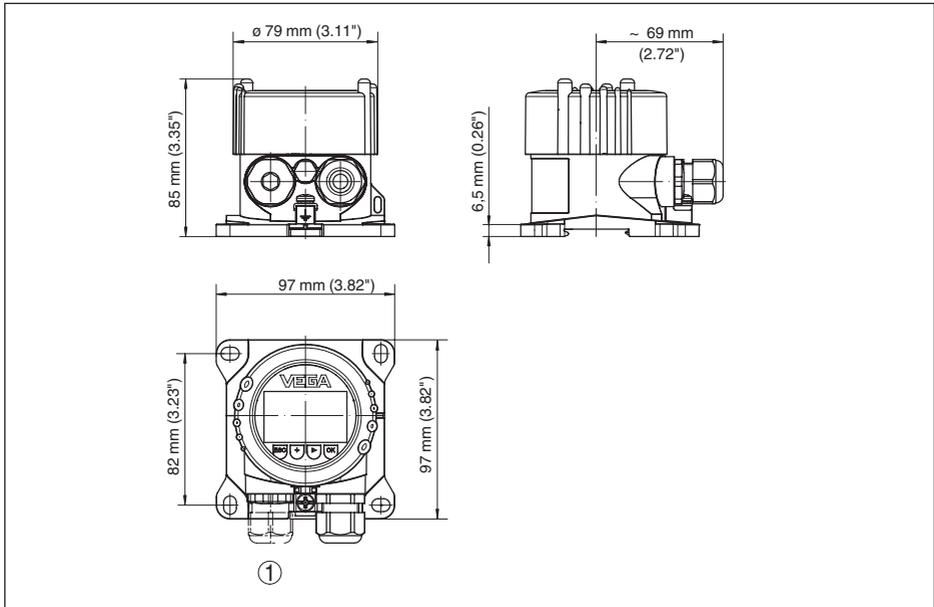


Fig. 30: VEGADIS 81 with plastic housing

1 Cable gland with version with heated display and adjustment module

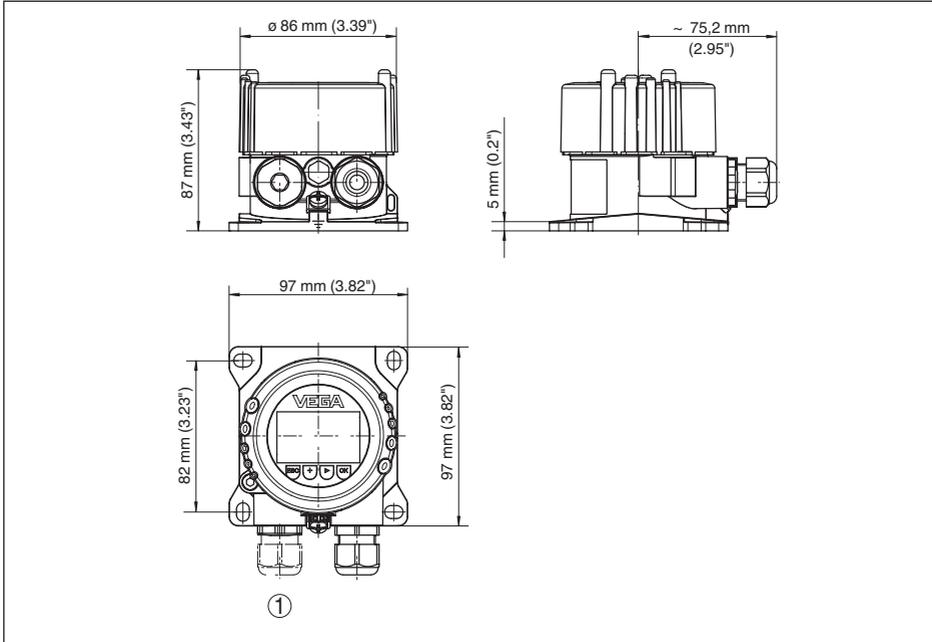
**VEGADIS 81, aluminium housing**

Fig. 31: VEGADIS 81 with Aluminium housing

1 Cable gland with version with heated display and adjustment module

**VEGADIS 81, stainless steel precision cast housing**

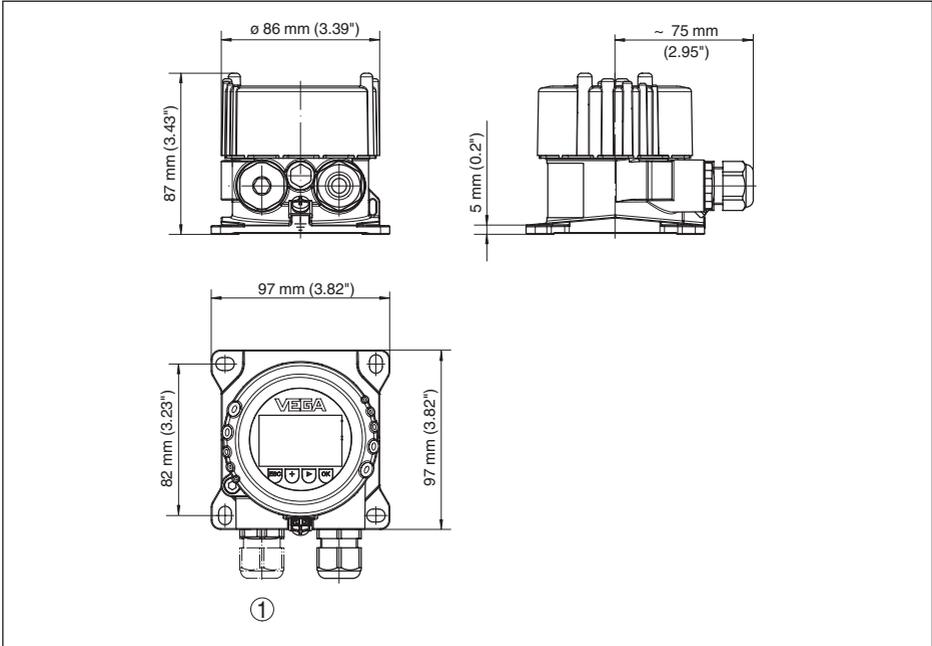


Fig. 32: VEGADIS 81 with stainless steel, precision cast housing

1 Cable gland with version with heated display and adjustment module

**Mounting elements**

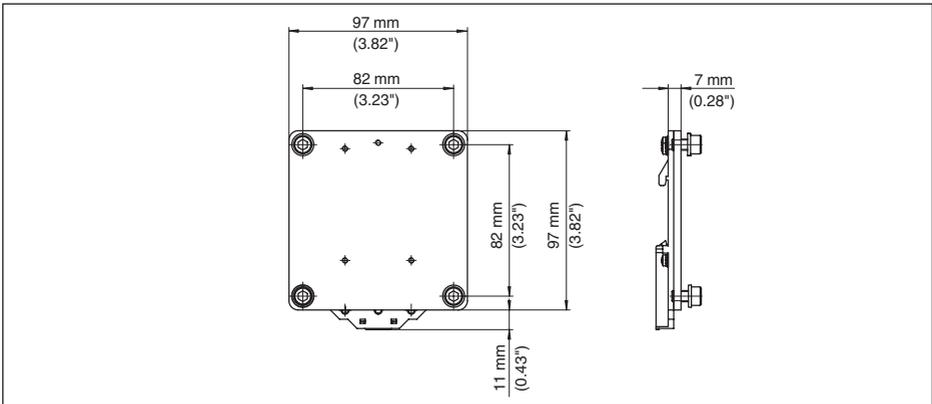


Fig. 33: Adapter plate for carrier rail mounting of VEGADIS 81

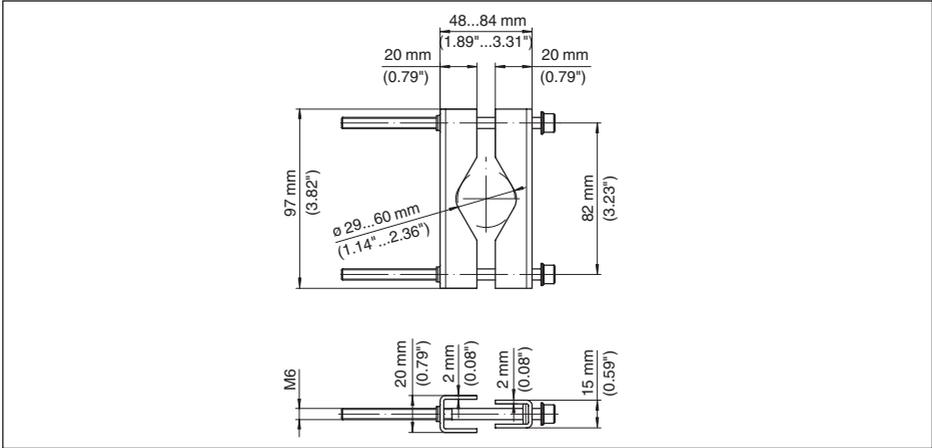


Fig. 34: Brackets for tube mounting of VEGADIS 81

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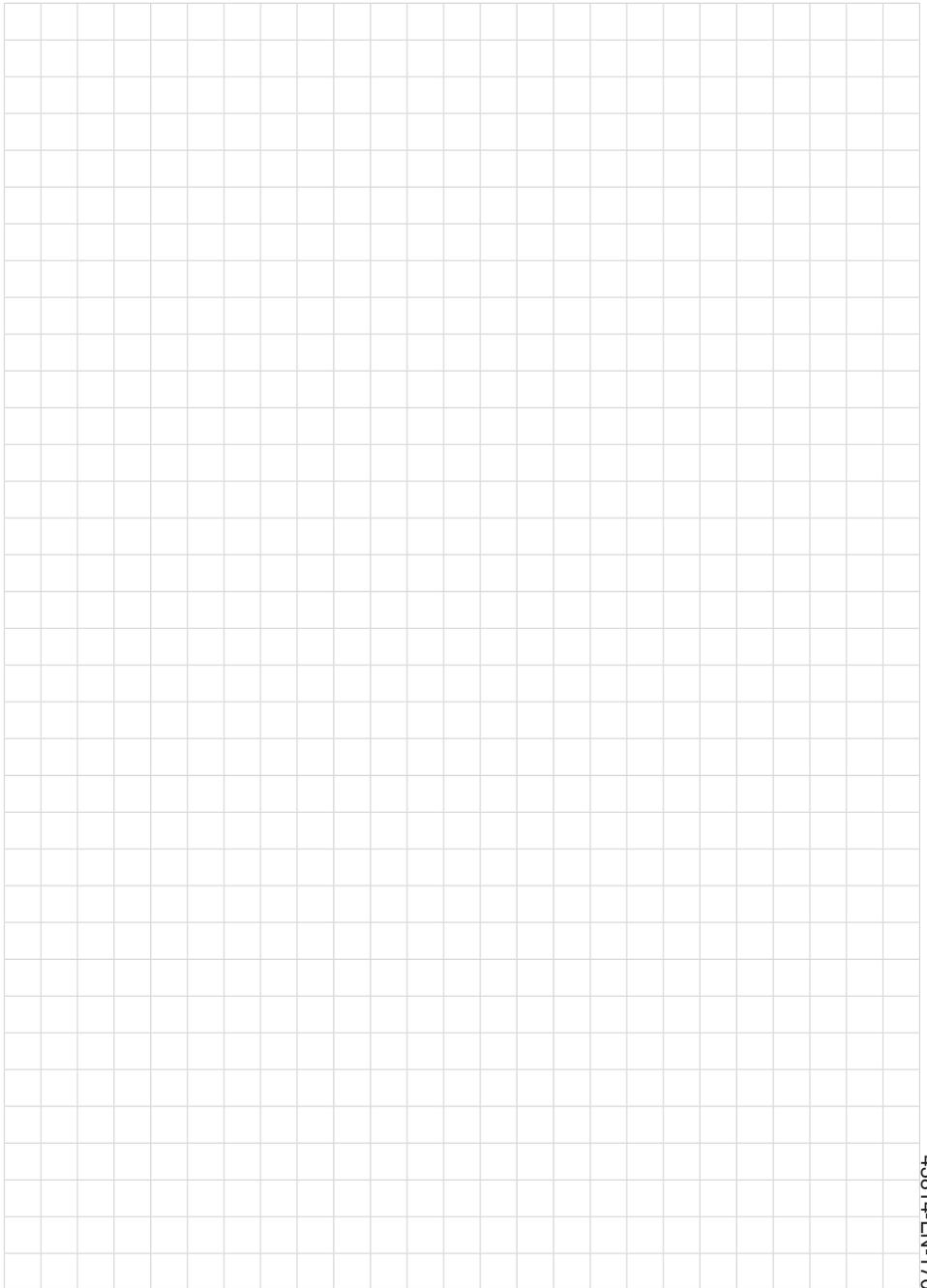
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### 11.4 Trademark

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Printing date:

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