

Quick setup guide

Ultrasonic sensor for continuous level measurement

VEGASON 61

Four-wire 4 ... 20 mA/HART



Document ID: 51856



VEGA

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Information:

This quick setup guide enables quick setup and commissioning of your instrument.

You can find supplementary information in the corresponding, more detailed Operating Instructions Manual as well as the Safety Manual that comes with instruments with SIL qualification. These manuals are available in the download area of "www.vega.com".

Operating instructions VEGASON 61 - 4 ... 20 mA/HART - four-wire: Document-ID 28778

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1 For your safety

1.1 Authorised personnel

All operations described in this documentation must be carried out only by trained, qualified personnel authorised by the plant operator. During work on and with the device, the required personal protective equipment must always be worn.

1.2 Appropriate use

VEGASON 61 is a sensor for continuous level measurement.

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.

1.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overflow or damage to system components through incorrect mounting or adjustment. Thus damage to property, to persons or environmental contamination can be caused. Also the protective characteristics of the instrument can be influenced.

1.4 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 read in this operating instructions manual.

1.5 Safety label on the instrument

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

1.6 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.

Electromagnetic compatibility

The instruments are designed for use in an industrial environment. Nevertheless, electromagnetic interference from electrical conductors and radiated emissions must be taken into account, as is usual with a class A instrument according to EN 61326-1. If the instrument is used in a different environment, its electromagnetic compatibility with other devices must be ensured by suitable measures.

1.7 Fulfilment of 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 43 – Signal level for fault information from measuring transducers
- NE 53 – Compatibility of field devices and display/adjustment components

For further information see www.namur.de.

1.8 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*"

2 Product description

2.1 Configuration

Type label

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

- Instrument type
- Article and serial number device
- Article number, documentation
- Technical data: Approvals, process seal/process temperature, signal output, voltage supply, protection, protection class
- Data matrix code for VEGA Tools app
- SIL identification (with SIL rating ex works)

Serial number

Move to "www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can access the data via your smartphone:

- Download the VEGA Tools app 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

3 Mounting

3.1 Mounting instructions

Reference plane for measuring range

The reference plane for the measuring range is the lower edge of the transducer.

Make sure that a minimum distance from the reference plane - the so-called dead zone, in which measurement is not possible - is maintained. The exact value of the dead zone is stated in chapter "Technical data".

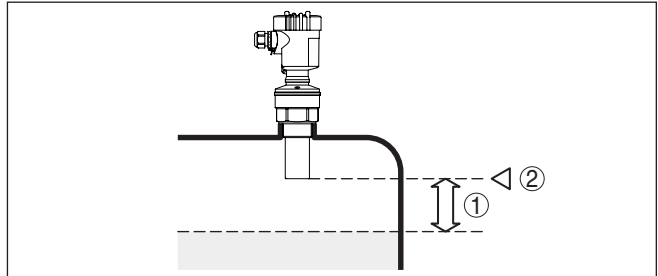


Fig. 1: Minimum distance to the max. level

- 1 Dead zone
- 2 Reference plane

Mounting

Mount the sensor at least 200 mm (7.874 in) away from the vessel wall.

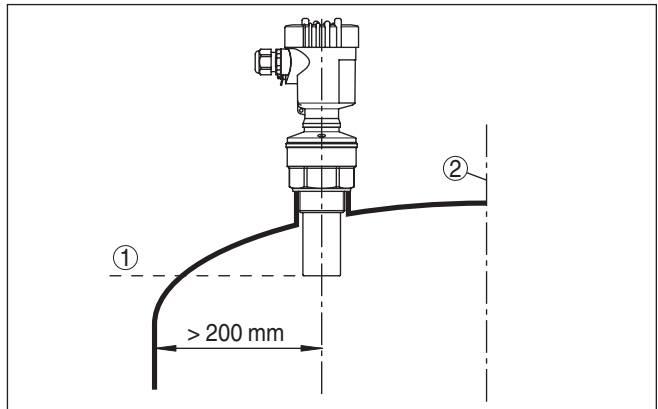


Fig. 2: Mounting on round vessel tops

- 1 Reference plane
- 2 Vessel center or symmetry axis

4 Connecting to power supply

4.1 Connection procedure

Proceed as follows:

1. Unscrew the housing lid
2. Loosen compression nut of the cable gland and remove blind plug
3. Remove approx. 10 cm (4 in) of the cable mantle (current output), strip approx. 1 cm (0.4 in) insulation from the ends of the individual wires
4. Insert the cable into the sensor through the cable entry
5. Lift the opening levers of the terminals with a screwdriver
6. Insert the wire ends into the open terminals according to the wiring plan
7. Press down the opening levers of the terminals, you will hear the terminal spring closing
8. Check the hold of the wires in the terminals by lightly pulling on them
9. Connect the screen to the internal ground terminal, connect the external ground terminal to potential equalisation
10. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
11. Connect the lead cable for power supply in the same way according to the wiring plan, in addition connect the ground conductor to the inner ground terminal.
12. Screw the housing lid back on

The electrical connection is finished.



Fig. 3: Connection steps 5 and 6

4.2 Wiring plan, double chamber housing

Wiring plan

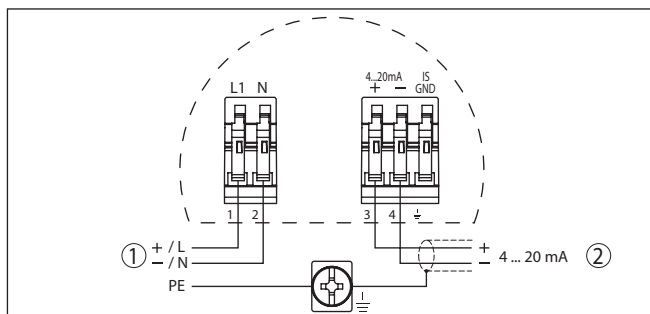


Fig. 4: Wiring plan - double chamber housing

- 1 Voltage supply
- 2 Signal output

5 Set up with the display and adjustment module PLICSCOM

Mount/dismount display and adjustment module

5.1 Insert display and adjustment module

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

Proceed as follows:

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. 5: Insert display and adjustment module



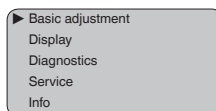
Note:

If you intend to retrofit the instrument with a display and adjustment module for continuous measured value indication, a higher lid with an inspection glass is required.

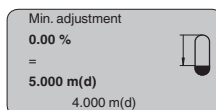
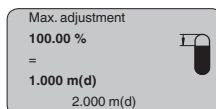
5.2 Setup steps

Set parameters

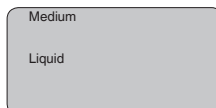
1. Go to the menu "*Basic adjustment*" via the display and adjustment module.



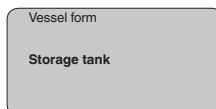
2. Carry out the adjustment in the menu items "*Min. adjustment*" and "*Max. adjustment*".



3. Select in the menu item "*Medium*" the medium of your application, for example "*Aqueous solution*".



4. Select in the menu item "*Application*" the vessel, the application and the vessel form, for example, "*Storage tank*".



Parameter adjustment

The sensor measures the distance from the sensor to the product surface. For indication of the real level, an allocation of the measured distance to the percentage height must be carried out.

The actual level is then calculated on the basis of these entered values. At the same time, the operating range of the sensor is limited from maximum range to the requested range.

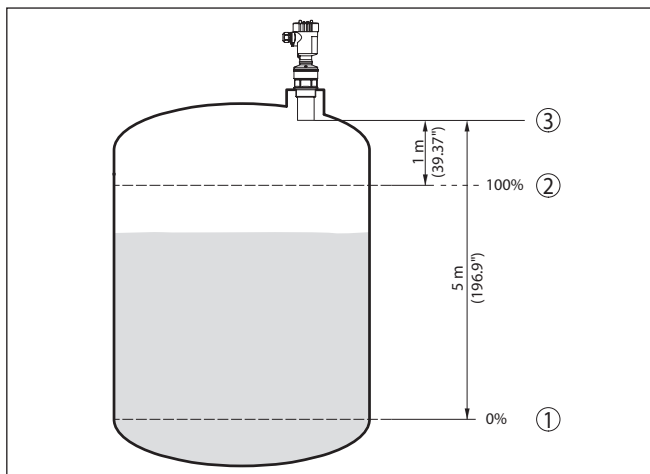


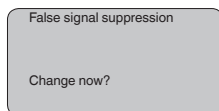
Fig. 6: Parameterisation example, Min./max. adjustment

- 1 Min. level = max. measuring distance
- 2 Max. level = min. measuring distance
- 3 Reference plane

The actual product level during this adjustment is not important, because the min./max. adjustment is always carried out without changing the product level. These settings can be made ahead of time without the instrument having to be installed.

Service - False signal suppression

High sockets or vessel installations, such as e. g. struts or agitators as well as buildup and weld joints on the vessel walls, cause interfering reflections which can impair the measurement. A false echo storage detects and marks these false echoes, so that they are no longer taken into account for the level measurement. A false echo memory should be created with low level so that all potential interfering reflections can be detected.



Proceed as follows:

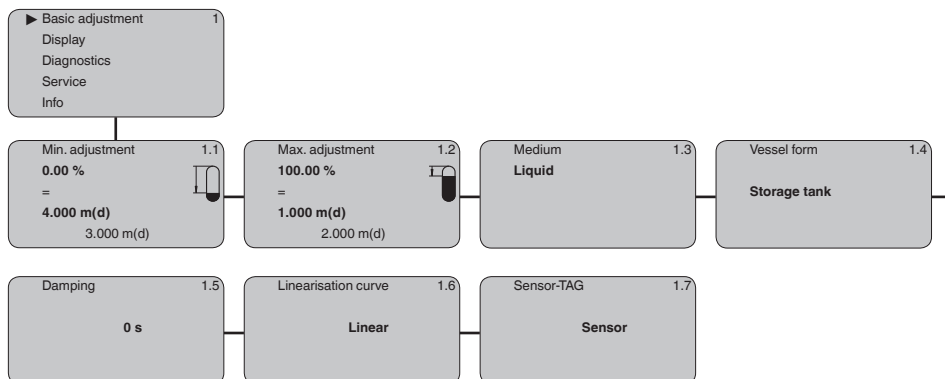
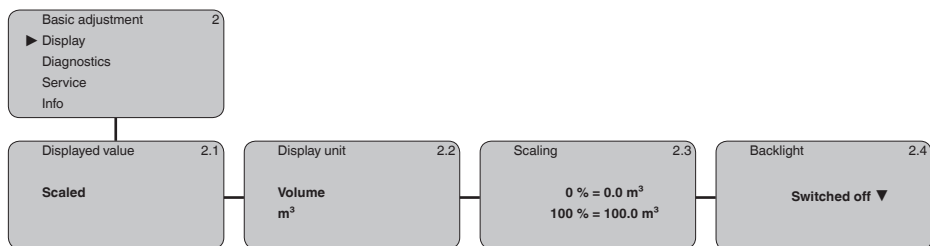
1. Move from the measured value display to the main menu by pushing **[OK]**.
2. Select the menu item "Service" with **[->]** and confirm with **[OK]**. Now the menu item "False signal suppression" is displayed.
3. Confirm "False signal suppression - Change now" with **[OK]** and select in the below menu "Create new". Enter the actual distance from the sensor to the product surface. All false signals in this area are detected by the sensor and saved after confirming with **[OK]**.

**Note:**

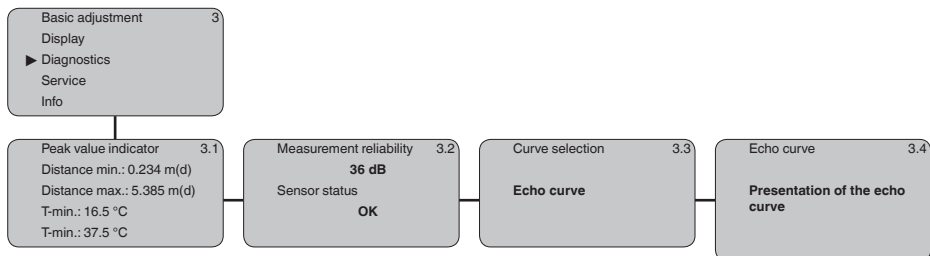
Check the distance to the product surface, because if an incorrect (too large) value is entered, the existing level will be saved as a false signal. The level would then no longer be detectable in this area.

5.3 Menu schematic**Information:**

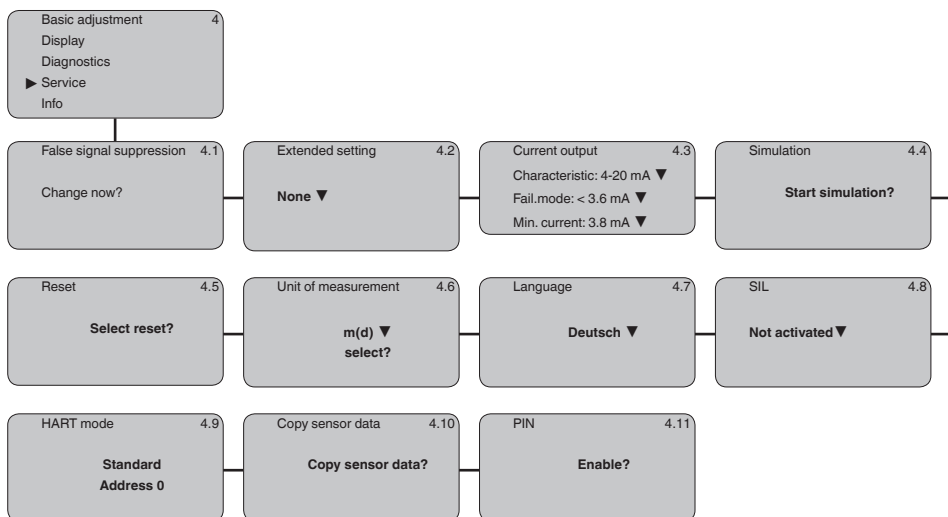
Depending on the version and application, the highlighted menu windows may not always be available.

Basic adjustment**Display**

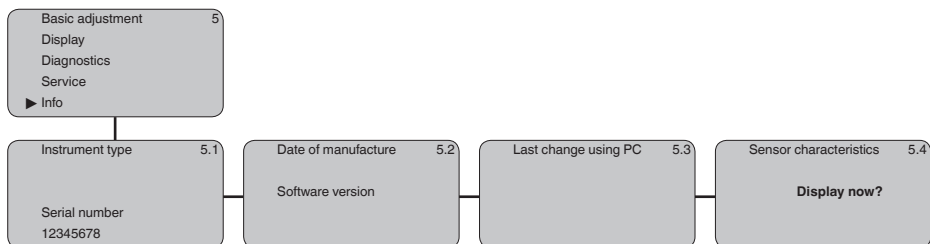
Diagnostics



Service



Info



6 Supplement

6.1 Technical data

Note for approved instruments

The technical data in the respective safety instructions are valid for approved instruments (e.g. with Ex approval). These data can differ from the data listed herein, for example regarding the process conditions or the voltage supply.

Input variable

Measured variable	distance between lower edge of the transducer and product surface
Measuring range	
– Liquids	up to 5 m (16.4 ft)
– Bulk solids	up to 2 m (6.562 ft)
Dead zone	0.25 m (0.82 ft)

Electromechanical data - version IP 66/IP 67

Cable entry

- Double chamber housing
 - 1 x cable gland M20 x 1.5 (cable: \varnothing 5 ... 9 mm), 1 x blind plug M20 x 1.5; plug M12 x 1 for VEGADIS 61 (optional)
 - or:
 - 1 x closing cap $\frac{1}{2}$ NPT, 1 x blind plug $\frac{1}{2}$ NPT, plug M12 x 1 for VEGADIS 61 (optional)
 - or:
 - 1 x plug (depending on the version), 1 x blind plug M20 x 1.5; plug M12 x 1 for VEGADIS 61 (optional)

Spring-loaded terminals for wire cross-section < 2.5 mm² (AWG 14)

Voltage supply

Operating voltage

- Non-Ex and Ex-d instrument 20 ... 72 V DC, 20 ... 253 V AC, 50/60 Hz

Power consumption max. 4 VA; 2.1 W

Printing date:

VEGA

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.

Subject to change without prior notice

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