Product information
Hydrostatic

Submersible pressure transmitter
VEGABAR 86
VEGABAR 87
VEGAWELL 52
## Contents

1. Measuring principle......................................................................................................................... 3
2. Type overview...................................................................................................................................... 4
3. Instrument selection............................................................................................................................ 5
4. Selection criteria.................................................................................................................................. 6
5. Housing overview VEGABAR 86, 87 .................................................................................................. 7
6. Mounting............................................................................................................................................. 8
7. Electronics - 4 … 20 mA - Two-wire VEGABAR 86, 87 ...................................................................... 9
8. Electronics - 4 … 20 mA - Two-wire VEGAWELL 52 ......................................................................... 10
9. Electronics - 4 … 20 mA/HART - Two-wire VEGABAR 86 and 87 .................................................... 11
10. Electronics - 4 … 20 mA/HART Pt 100 - Two-wire VEGAWELL 52 ................................................. 12
11. Electronics - Profibus PA VEGABAR 86 and 87 ............................................................................. 13
12. Electronics - Foundation Fieldbus VEGABAR 86 and 87 ............................................................... 14
13. Electronics - Modbus, Levelmaster protocol .................................................................................. 15
14. Adjustment ....................................................................................................................................... 16
15. Dimensions....................................................................................................................................... 18

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**Take note of safety instructions for Ex applications**

Please note the Ex specific safety information that you can find at [www.vega.com](http://www.vega.com) and that comes with each instrument. In hazardous areas you should take note of the appropriate regulations, conformity and type approval certificates of the sensors and power supply units. The sensors must only be operated on intrinsically safe circuits. The permissible electrical values are stated in the certificate.
1 Measuring principle

1.1 Basic function
The pressure of the measured medium acts on the pressure measuring cell, converting this pressure into an electronic signal. The ceramic-capacitive CERTEC® and MINI-CERTEC® as well as the metallic METEC®, piezo and strain gauge measuring cells are used.

1.2 Measuring cell technology
VEGABAR 86
The sensor element is the ceramic CERTEC® measuring cell with front-flush, abrasion-resistant ceramic diaphragm.

VEGABAR 87
The METEC® measuring cell is the sensor element. It consists of the ceramic-capacitive CERTEC® measuring cell and a special, temperature-compensated chemical seal system.

VEGAWELL 52
The sensor element is the ceramic CERTEC® measuring cell with front-flush, abrasion-resistant ceramic diaphragm.
## Type overview

<table>
<thead>
<tr>
<th>Measuring cell</th>
<th>CERTEC®</th>
<th>METEC®</th>
<th>CERTEC®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material diaphragm</td>
<td>Al₂O₃ ceramic</td>
<td>Alloy C276</td>
<td>Al₂O₃ ceramic</td>
</tr>
<tr>
<td>Media</td>
<td>Liquids, also with abrasive content</td>
<td>gas, vapours and liquids, also viscous</td>
<td>Liquids, also with abrasive content</td>
</tr>
<tr>
<td>Process fitting</td>
<td>Straining clamp, unassembled threaded fitting from G1½, thread G1½, flanges from DN 50</td>
<td>Straining clamp, unassembled threaded fitting from G1½, thread G1½, flanges from DN 50</td>
<td>Straining clamp, unassembled threaded fitting G1, thread G1½</td>
</tr>
<tr>
<td>Material suspension</td>
<td>PE, PUR, FEP, 316L</td>
<td>FEP, 316L</td>
<td>PE, PUR, FEP</td>
</tr>
<tr>
<td>Measuring cell</td>
<td>FKM, EPDM, FFKM</td>
<td>FKM, EPDM, FFKM</td>
<td>-</td>
</tr>
<tr>
<td>Isolating liquid</td>
<td>Dry measuring system</td>
<td>Medical white oil</td>
<td>Dry measuring system</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0 ... +25 bar/0 ... +2500 kPa (-14.5 ... +362.6 psig)</td>
<td>0 ... +25 bar/0 ... +2500 kPa (-14.5 ... +362.6 psig)</td>
<td>0 ... +25 bar/0 ... +2500 kPa (-14.5 ... +362.6 psig)</td>
</tr>
<tr>
<td>Smallest measuring range</td>
<td>0.025 bar/0.5 kPa (1.45 psig)</td>
<td>0.1 bar/10 kPa (1.45 psig)</td>
<td>0.1 bar/10 kPa (1.45 psig)</td>
</tr>
<tr>
<td>Process temperature</td>
<td>-40 ... +100 °C (-40 ... +212 °F)</td>
<td>-12 ... +100 °C (+10.4 ... +212 °F)</td>
<td>-20 ... +80 °C (-4 ... +176 °F)</td>
</tr>
<tr>
<td>Deviation</td>
<td>&lt; 0.1 %; &lt; 0.2 %</td>
<td>&lt; 0.1 %; &lt; 0.2 %</td>
<td>&lt; 0.1 %; &lt; 0.2 %</td>
</tr>
<tr>
<td>Signal output</td>
<td>4 ... 20 mA, 4 ... 20 mA/HART, PA, FF, Modbus</td>
<td>4 ... 20 mA, 4 ... 20 mA/HART, PA, FF, Modbus</td>
<td>4 ... 20 mA, 4 ... 20 mA/HART</td>
</tr>
<tr>
<td>Additional interface</td>
<td>Digital interface for Slave-Master combination</td>
<td>Digital interface for Slave-Master combination</td>
<td>Voltage supply/Processing temperature sensor Pt 100</td>
</tr>
<tr>
<td>Indication/Adjustment</td>
<td>PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82</td>
<td>PLICSCOM, PACTware, VEGADIS 81, VEGADIS 82</td>
<td>PACTware, VEGADIS 82</td>
</tr>
<tr>
<td>Approvals</td>
<td>SIL, Shipbuilding, ATEX, IEC, Overfill protection, FM, CSA, EAC (GOST)</td>
<td>SIL, Shipbuilding, ATEX, IEC, Overfill protection, FM, CSA, EAC (GOST)</td>
<td>Overfill protection, Shipbuilding, ATEX, IEC, Overfill protection</td>
</tr>
</tbody>
</table>
3 Instrument selection

Application area
The hydrostatic pressure transmitters VEGAWELL and VEGABAR were especially developed to measure levels in a wide range of liquids with different properties. Measurement of the product temperature is also possible.

VEGABAR 86
VEGABAR 86 is a submersible pressure transmitter for level measurement in wells, basins and open vessels. Great flexibility through the use of different cable and tube versions allows VEGABAR 86 to be employed in many different applications.

VEGABAR 87
VEGABAR 87 is a pressure transmitter for pressure and level measurement of liquids and viscous products in the chemical, food processing and pharmaceutical industries. VEGABAR 87 can be used for extremely small measuring ranges ≥ 0.1 bar.

VEGAWELL 52
VEGAWELL 52 lends itself well for continuous level measurement of liquids. Typical applications are measurements in water/waste water facilities, in deep wells and in the shipbuilding industry.

Configuration and housing protection classes
The pressure transmitters VEGABAR 86 and 87 are available in different versions. The following illustration shows typical examples.

Fig. 7: Examples of a VEGABAR 86 with suspension cable (left) and connection tube (right)
1 Housing with integrated electronics
2 Suspension cable
3 Connection tube
4 Threaded fitting
5 Transmitter
6 Protective cap

Measured variables
The submersible pressure transmitters VEGABAR 86, 87 as well as VEGAWELL 52 are suitable for hydrostatic level measurement.

Fig. 8: Measurement setup for level measurement
In conjunction with a slave sensor, VEGABAR 86 and 87 are suitable for electronic differential pressure measurement of:
- Level, pressurized
- Level difference
- Flow
- Density
- Interface

Fig. 9: Electronic level difference measurement through Master/Slave combination
## 4 Selection criteria

<table>
<thead>
<tr>
<th></th>
<th>VEGABAR 86</th>
<th>VEGABAR 87</th>
<th>VEGAWELL 52</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wear through the medium</strong></td>
<td></td>
<td>●</td>
<td>–</td>
</tr>
<tr>
<td>Aggressive products</td>
<td></td>
<td>●</td>
<td>–</td>
</tr>
<tr>
<td>Abrasive products</td>
<td>●</td>
<td>–</td>
<td>●</td>
</tr>
<tr>
<td><strong>Product temperature up to</strong></td>
<td></td>
<td>●</td>
<td>●○</td>
</tr>
<tr>
<td>+80 °C (+176 °F)</td>
<td>●</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>+100 °C (+212 °F)</td>
<td>●</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td><strong>Output, product temperature</strong></td>
<td></td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Through display, signal output</td>
<td>●</td>
<td>–○</td>
<td>●○</td>
</tr>
<tr>
<td>Through external temperature transmitter</td>
<td>–○</td>
<td>–○</td>
<td>●○</td>
</tr>
<tr>
<td><strong>Measuring system</strong></td>
<td></td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Dry</td>
<td>●</td>
<td>–○</td>
<td>●○</td>
</tr>
<tr>
<td>Oil-filled</td>
<td>–○</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td><strong>Suitability for electronic differential pressure measurement</strong></td>
<td>● ○</td>
<td>● ○</td>
<td>– ○</td>
</tr>
<tr>
<td><strong>Suitability for use in sounding tubes</strong></td>
<td></td>
<td>● ○</td>
<td>– ○</td>
</tr>
<tr>
<td>Inner diameter 1&quot;</td>
<td>–○</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Inner diameter 1 ½&quot;</td>
<td>●</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td><strong>Integrated overvoltage protection</strong></td>
<td></td>
<td>●○</td>
<td>–○</td>
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<tr>
<td>Standard</td>
<td>–○</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Option</td>
<td>●○</td>
<td>–○</td>
<td>●○</td>
</tr>
<tr>
<td><strong>Suitability for industry-specific applications</strong></td>
<td></td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Paper</td>
<td>●</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Shipbuilding</td>
<td>●</td>
<td>–○</td>
<td>●○</td>
</tr>
<tr>
<td>Environment and recycling industry</td>
<td>●</td>
<td>●○</td>
<td>–○</td>
</tr>
<tr>
<td>Water/Waste water</td>
<td>●</td>
<td>–○</td>
<td>●○</td>
</tr>
</tbody>
</table>
## Housing overview VEGABAR 86, 87

<table>
<thead>
<tr>
<th>Plastic PBT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection rating</strong></td>
<td>IP 66/IP 67</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>Single chamber</td>
</tr>
<tr>
<td><strong>Application area</strong></td>
<td>Industrial environment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aluminium</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection rating</strong></td>
<td>IP 66/IP 67, IP 66/IP 68 (1 bar)</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>Single chamber</td>
</tr>
<tr>
<td><strong>Application area</strong></td>
<td>Industrial environment with increased mechanical stress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stainless steel 316L</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection rating</strong></td>
<td>IP 66/IP 67</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>Single chamber, electropolished</td>
</tr>
<tr>
<td><strong>Application area</strong></td>
<td>Aggressive environment, food processing, pharmaceutical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Separate version</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
<td>Stainless steel 316L</td>
</tr>
<tr>
<td><strong>Protection rating</strong></td>
<td>IP 68 (25 bar)</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Transmitter</td>
</tr>
<tr>
<td><strong>Application area</strong></td>
<td>Extremely moist environment</td>
</tr>
</tbody>
</table>
6 Mounting

Installation position
The suspension cable versions must be mounted in a calm area or in a suitable protective tube. This avoids lateral movements of the transmitter and the resulting distortion of measurement data.

The suspension cable contains, apart from the connection cables and the suspension wire, also the capillaries for atmospheric pressure compensation.

Mounting examples and measurement setups
The following illustrations show mounting examples and measurement setups.

Level measurement
The VEGABAR measures the level in a vessel.

Fig. 19: Level measurement with VEGABAR
Configuration of the electronics

The plug-in electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the contact pins with \(^\text{I^2C}\) interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, the terminals are located in the separate terminal compartment.

Voltage supply

Power supply and current signal are carried on the same two-wire cable. The operating voltage can differ depending on the instrument version.

You can find the data of the voltage supply in chapter "Technical data" in the operating instructions manual of the respective instrument.

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

Specifications of the voltage supply:

- **Operating voltage**
  - 9.6 ... 35 V DC
- **Permissible residual ripple - Non-Ex, Ex-ia instrument**
  - for \(U_n\) 12 V DC: \(\leq 0.7 V_{\text{eff}}\) (16 ... 400 Hz)
  - for \(U_n\) 24 V DC: \(\leq 1.0 V_{\text{eff}}\) (16 ... 400 Hz)
- **Permissible residual ripple - Ex-d-ia instrument**
  - for \(U_n\) 24 V DC: \(\leq 1.0 V_{\text{eff}}\) (16 ... 400 Hz)

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

- Lower output voltage of the power supply unit under nominal load (e.g. with a sensor current of 20.5 mA or 22 mA in case of fault)
- Influence of additional instruments in the circuit (see load values in chapter "Technical data" of the operating instructions of the respective instrument)

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.

Cable screening and grounding

If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

Connection

Single chamber housing
8 Electronics - 4 … 20 mA - Two-wire VEGAWELL 52

Voltage supply
Power supply and current signal are carried on the same two-wire cable. The operating voltage can differ depending on the instrument version. You can find the data of the voltage supply in chapter "Technical data" in the operating instructions manual of the respective instrument.

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

Specifications of the voltage supply:

- Operating voltage: 8 … 35 V DC
- Permissible residual ripple:
  - < 100 Hz: < 1 V
  - 100 Hz … 400 Hz: < 10 mV

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

- Lower output voltage of the power supply unit under nominal load (e.g. with a sensor current of 20.5 mA or 22 mA in case of fault)
- Influence of additional instruments in the circuit (see load values in chapter "Technical data" of the operating instructions of the respective instrument)

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.

Cable screening and grounding
If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

Connection

Direct connection

Connection via VEGABOX 03

Connection via VEGABOX 03

<table>
<thead>
<tr>
<th>Wire number</th>
<th>Wire colour/Polarity</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>brown (+)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>blue (-)</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Shielding</td>
<td>Grounding</td>
</tr>
</tbody>
</table>

Fig. 22: Wiring plan VEGABAR for 4 … 20 mA, 4 … 20 mA/HART
1 To the sensor
2 To power supply or processing system
3 Shielding
4 Breather capillaries with filter element

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

---

**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.

**Cable screening and grounding**

If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

**Connection**

**Direct connection**

---
Configuration of the electronics

The plug-in electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, the terminals are located in the separate terminal compartment.

Voltage supply

Power supply and current signal are carried on the same two-wire cable. The operating voltage can differ depending on the instrument version. You can find the data of the voltage supply in chapter "Technical data" in the operating instructions manual of the respective instrument.

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

Specifications of the voltage supply:

- Operating voltage
  - 9.6 ... 35 V DC
- Permissible residual ripple - Non-Ex, Ex-ia instrument
  - for U₅ 12 V DC: ≤ 0.7 Vₚₚ (16 ... 400 Hz)
  - for U₅ 24 V DC: ≤ 1.0 Vₚₚ (16 ... 400 Hz)
- Permissible residual ripple - Ex-d-ia instrument
  - for U₅ 24 V DC: ≤ 1.0 Vₚₚ (16 ... 400 Hz)

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

- Lower output voltage of the power supply unit under nominal load (e.g. with a sensor current of 20.5 mA or 22 mA in case of fault)
- Influence of additional instruments in the circuit (see load values in chapter "Technical data" of the operating instructions of the respective instrument)

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.

We generally recommend the use of screened cable for HART multidrop mode.

Cable screening and grounding

If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).
10  Electronics - 4 … 20 mA/HART Pt 100 - two-wire VEGAWELL 52

Voltage supply
Power supply and current signal are carried on the same two-wire cable. The operating voltage can differ depending on the instrument version. You can find the data of the voltage supply in chapter "Technical data" in the operating instructions manual of the respective instrument.

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

Specifications of the voltage supply:
- Operating voltage
  - 9.6 … 35 V DC
- Permissible residual ripple
  - < 100 Hz: < 1 V
  - 100 Hz … 400 Hz: < 10 mV

Keep in mind the following additional factors that influence the operating voltage:
- Lower output voltage of the power supply unit under nominal load (e.g. with a sensor current of 20.5 mA or 22 mA in case of fault)
- Influence of additional instruments in the circuit (see load values in chapter "Technical data" of the operating instructions of the respective instrument)

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.

We generally recommend the use of screened cable for HART multidrop mode.

Cable screening and grounding
If screened cable is required, we recommend connecting the cable screen on both ends to ground potential. In the sensor, the screen must be connected directly to the internal ground terminal. The ground terminal on the outside of the housing must be connected to the ground potential (low impedance).

Connection

Direct connection

Connection via VEGABOX 03

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2) Connect screen to ground terminal. Connect ground terminal on the outside of the housing to ground as prescribed. The two terminals are galvanically connected.
11  Electronics - Profibus PA VEGABAR 86 and 87

Configuration of the electronics

The plug-in electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the plug with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, these connection elements are located in the separate terminal compartment.

Voltage supply

The voltage supply is provided by a Profibus DP /PA segment coupler.

Specifications of the voltage supply:
- Operating voltage
  - 9 ... 32 V DC
- Max. number of sensors per DP/PA segment coupler
  - 32

Connection cable

Connection is carried out with screened cable according to Profibus specification.

Make sure that the entire installation is carried out according to the Profibus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding

In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor may not be connected to ground potential or to another cable screen.

Connection

Single chamber housing

Connection, double chamber housing

![Diagram](image-url)
12 Electronics - Foundation Fieldbus VEGABAR 86 and 87

Configuration of the electronics
The plug-in electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The terminals for voltage supply as well as the plug with I²C interface for parameter adjustment are located on the upper side of the electronics. In the double-chamber housing, these connection elements are located in the separate terminal compartment.

Voltage supply
Power supply via the H1 Fieldbus cable.

Specifications of the voltage supply:
- Operating voltage
  - 9 ... 32 V DC
- max. number of sensors
  - 32

Connection cable
Connection is carried out with screened cable according to Fieldbus specification.

Make sure that the entire installation is carried out according to the Fieldbus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding
In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor may not be connected to ground potential or to another cable screen.

Connection

Single chamber housing

Connection, double chamber housing

Fig. 29: Electronics and terminal compartment, single chamber housing
1 Voltage supply/Signal output
2 Contact pins for the display and adjustment module or interface adapter
3 Selection switch for bus address
4 For external display and adjustment unit
5 Ground terminal for connection of the cable screen

Fig. 30: Terminal compartment, double chamber housing
1 Voltage supply, signal output
2 For display and adjustment module or interface adapter
3 For external display and adjustment unit
4 Ground terminal for connection of the cable screen
13 Electronics - Modbus, Levelmaster protocol

Configuration of the electronics
The plug-in electronics is mounted in the electronics compartment of the instrument and can be exchanged by the user when servicing is required. The electronics is completely encapsulated to protect against vibration and moisture.

The contact pins with I²C interface for parameter adjustment are located on the upper side of the electronics. The terminals for the power supply are located in the separate connection compartment.

Voltage supply
Power supply via the Modbus host (RTU)
- Operating voltage
  - 8 ... 30 V DC
- max. number of sensors
  - 32

Connection cable
The instrument is connected with standard two-wire, twisted cable suitable for RS 485. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

For power supply, a separate two-wire cable is required.
Make sure that the entire installation is carried out according to the Fieldbus specification. In particular, make sure that the bus is terminated with suitable terminating resistors.

Cable screening and grounding
In systems with potential equalisation, connect the cable screen directly to ground potential at the power supply unit, in the connection box and at the sensor. The screen in the sensor must be connected directly to the internal ground terminal. The ground terminal outside on the housing must be connected to the potential equalisation (low impedance).

In systems without potential equalisation, connect the cable screen directly to ground potential on the power supply unit and the sensor. In the connection box or T-distributor, the screen of the short stub to the sensor may not be connected to ground potential or to another cable screen.

Connection
Double chamber housing

![Fig. 31: Terminal compartment](image)

1 USB interface
2 Slide switch for integrated termination resistor (120 Ω)
3 Modbus signal
4 Voltage supply
14 Adjustment

14.1 Adjustment directly at the measuring point

Via the display and adjustment module through keys
The plug-in display and adjustment module is used for measured value indication, adjustment and diagnosis. It is equipped with an illuminated full dot matrix as well as four keys for adjustment.

PACTware is an adjustment software for configuration, parameter adjustment, documentation and diagnosis of field devices. The corresponding device drivers are called DTM.

14.2 Operation in the measurement loop environment - wireless via Bluetooth

Via a smartphone/tablet
The display and adjustment module with integrated Bluetooth functionality allows wireless connection to smartphones/tablets with iOS or Android operating system. The adjustment is carried out via the VEGA Tools app from the Apple App Store or Google Play Store.

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

14.3 Adjustment carried out at position remote from the measuring point - wired

Via external display and adjustment units
For this, the external display and adjustment units VEGADIS 81 and 82 are available. The adjustment is carried out via the keys of the built-in display and adjustment module.

The VEGADIS 81 is mounted at a distance of 50 m from the sensor and directly to the sensor electronics. VEGADIS 82 is looped directly into the signal cable at any point.
Adjustment

14.4 Adjustment carried out at position remote from the measuring point - wireless through mobile network

As an option, the radio module PLICSMOBILE can be mounted into a plics® sensor with double chamber housing. It is used for transmission of measured values and for remote parameter adjustment of the sensor.

14.5 Alternative adjustment programs

DD adjustment programs

Device descriptions as Enhanced Device Description (EDD) are available for DD adjustment programs such as, for example, AMS™ and PDM. The files can be downloaded at www.vega.com/downloads under “Software”.

Field Communicator 375, 475

Device descriptions for the instruments are available as EDD for parameterisation with Field Communicator 375 or 475. Integrating the EDD into the Field Communicator 375 or 475 requires the “Easy Upgrade Utility” software, which is available from the manufacturer. This software is updated via the Internet and new EDDs are automatically accepted into the device catalogue of this software after they are released by the manufacturer. They can then be transferred to a Field Communicator.
15 Dimensions

Plastic housing

Aluminium housing

Stainless steel housing

VEGABAR 86

1 Single chamber housing
2 Double chamber housing

1 Single chamber housing, electropolished
2 Single chamber housing, precision casting
2 Double chamber housing, precision casting

1 Version with suspension cable and threaded fitting unassembled G1½
2 Threaded version G1½, suspension cable
3 Threaded version G1½, connection tube
VEGABAR 87

1 Version with suspension cable and threaded fitting unassembled G1½
2 Threaded version G1½, suspension cable
3 Threaded version G1½, connection tube

VEGAWELL 52

1 Version with straining clamp
2 Version with unassembled screw connection G1½ and impact protection
3 Standard version with detachable plastic basket guard

The listed drawings represent only an excerpt of the available process fittings. You can find more drawings at www.vega.com/downloads under "Drawings".
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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