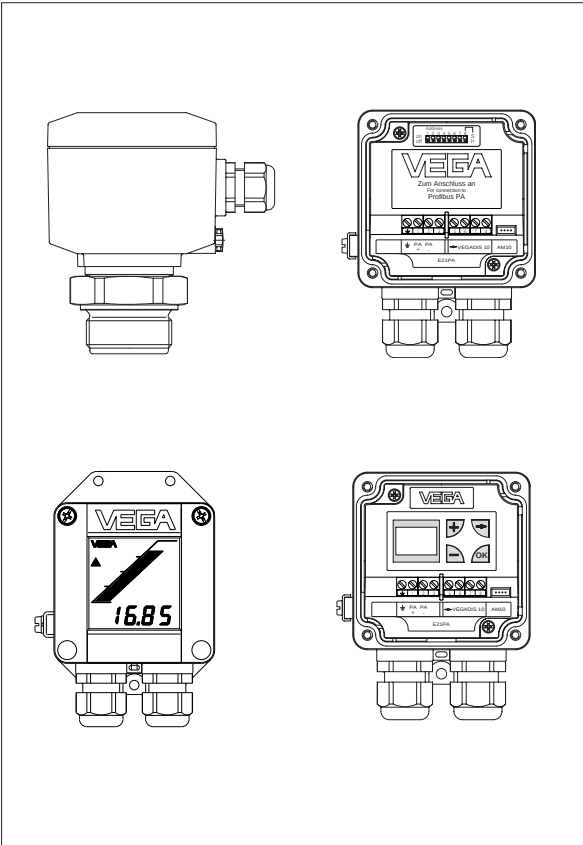


Operating Instructions

VEGABAR 44 (Profibus PA)



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Safety information

Please read this manual carefully, and also take note of country-specific installation standards (e.g. the VDE regulations in Germany) as well as all prevailing safety regulations and accident prevention rules.

For safety and warranty reasons, any internal work on the instruments, apart from that involved in normal installation and electrical connection, must be carried out only by qualified VEGA personnel.



Note Ex area

Please note the attached safety instructions containing important information on installation and operation in Ex areas.

These safety instructions are part of the operating instructions and come with the Ex approved instruments.

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1 Product description

1.1 Function and configuration

VEGABAR 44 process pressure transmitters are efficient instruments for process pressure measurement. As pressure sensor element, the dry ceramic-capacitive measuring cell CERTEC® is used. The process pressure effects via the diaphragm a capacitance change within the measuring cell. This capacitance change is detected by an ASIC (application specific integrated circuit) and converted into a pressure-proportional signal by the integrated electronics module with microcontroller. In addition, the process temperature is detected via a sensor element and converted into a temperature-dependent signal. Precise, high-resolution digital processing of measurement data ensures excellent technical data.

The electronics module is powered by a Profibus DP - PA segment coupler. The measured pressure is transmitted via the bus cable as a digital signal to the processing system and can be displayed on the indicating module or the external indicating instrument VEGADIS 10.

The following adjustment variants are available:

- adjustment module directly on VEGABAR
- adjustment modules in external housing (VEGADIS 10)
- via PC with adjustment software VEGA Visual Operating (VVO)

The instrument profile of VEGABAR behaves according to profile specification version 3.0. The instrument master file (GSD) is available as download on the homepage of VEGA (www.vega-g.de).

1.2 Self-monitoring

To improve reliability, the functionality of important electronic components is continuously checked, and internal parameters such as sensor value, temperature and operating voltage are closely monitored.

VEGABAR 44 with the ceramic CERTEC® measuring cell offers the advantage of continuous self-monitoring. The measuring and reference capacitances of the measuring cell constitute a predefined ratio over the entire measuring range. Any deviation from these data is a reliable indicator of a malfunction of the measuring cell.

If errors or malfunctions are detected during these routines, fault signals are triggered according to the Profibus PA specification.

1.3 Technical data

Mechanical data

Materials, wetted parts

Process connection	brass 2.041, stainless steel 1.4571
Diaphragm	saphire-ceramic® (99.9 % Oxideceramic)
Seal measuring cell	Viton, EPDM, Hifluour, Kalrez

Materials, non-wetted parts

Housing	high resistance plastic PBT (Polyester)
- optional	Alu die casting, powder-coated
Ground terminal	stainless steel 1.4305
Display module window	Lexan

Weight

VEGABAR	approx. 0.8 ... 2 kg (depending on the process connection)
---------	--

Adjustment and display elements

Menu-driven adjustment with additional function	
- adjustment elements	4 keys
- display elements	DOT-matrix display, 3 lines with 7 figures each
Version without adjustment module	
- adjustment element	8-pole mini coding switch for adjustment of the bus address
Display module	LC-display with
	- bar graph (20 segments)
	- digital value (4 digits)
	- tendency indicators for rising or falling values

Nominal measuring range	Gauge pressure resistance	Low pressure resistance
Gauge pressure		
0...0,1 bar / 0...10 kPa	15 bar / 1 500 kPa	-0,2 bar / -20 kPa
0...0,2 bar / 0...20 kPa	20 bar / 2 000 kPa	-0,4 bar / -40 kPa
0...0,4 bar / 0...40 kPa	30 bar / 3 000 kPa	-0,8 bar / -80 kPa
0...1,0 bar / 0...100 kPa	35 bar / 3 500 kPa	-1,0 bar / -100 kPa
0...2,5 bar / 0...250 kPa	50 bar / 5 000 kPa	-1,0 bar / -100 kPa
0...5,0 bar / 0...500 kPa	65 bar / 6 500 kPa	-1,0 bar / -100 kPa
0...10,0 bar / 0...1 000 kPa	90 bar / 9 000 kPa	-1,0 bar / -100 kPa
0...20,0 bar / 0...2 000 kPa	130 bar / 13 000 kPa	-1,0 bar / -100 kPa
0...40,0 bar / 0...4 000 kPa	200 bar / 20 000 kPa	-1,0 bar / -100 kPa
0...60,0 bar / 0...6 000 kPa	300 bar / 30 000 kPa	-1,0 bar / -100 kPa
-0,05...+0,05 bar / -5...+5 kPa	15 bar / 1 500 kPa	-0,2 bar / -20 kPa
-0,1...+0,1 bar / -10...+10 kPa	20 bar / 2 000 kPa	-0,4 bar / -40 kPa
-0,2...+0,2 bar / -20...+20 kPa	30 bar / 3 000 kPa	-0,8 bar / -80 kPa
-0,5...+0,5 bar / -50...+50 kPa	35 bar / 3 500 kPa	-1,0 bar / -100 kPa
-1,0...0,0 bar / -100...0 kPa	35 bar / 3 500 kPa	-1,0 bar / -100 kPa
-1,0...+1,5 bar / -100...+150 kPa	50 bar / 5 000 kPa	-1,0 bar / -100 kPa
-1,0...+4,0 bar / -100...+400 kPa	65 bar / 6 500 kPa	-1,0 bar / -100 kPa
-1,0...+10,0 bar / -100...+1 000 kPa	90 bar / 9 000 kPa	-1,0 bar / -100 kPa
-1,0...+20,0 bar / -100...+2 000 kPa	130 bar / 13 000 kPa	-1,0 bar / -100 kPa
-1,0...+40,0 bar / -100...+4 000 kPa	200 bar / 20 000 kPa	-1,0 bar / -100 kPa
-1,0...+60,0 bar / -100...+6 000 kPa	300 bar / 30 000 kPa	-1,0 bar / -100 kPa
Absolute pressure		
0...1,0 bar / 0...100 kPa	35 bar / 3 500 kPa	
0...2,5 bar / 0...250 kPa	50 bar / 5 000 kPa	
0...5,0 bar / 0...500 kPa	65 bar / 6 500 kPa	
0...10,0 bar / 0...1 000 kPa	90 bar / 9 000 kPa	
0...20,0 bar / 0...2 000 kPa	130 bar / 13 000 kPa	
0...40,0 bar / 0...4 000 kPa	200 bar / 20 000 kPa	
0...60,0 bar / 0...6 000 kPa	300 bar / 30 000 kPa	

Electrical data

Adjustment ranges

Zero	adjustable from -20 ... +95 % of nominal range
Span	adjustable from 3.3 ... 120 % of nominal range

Supply and signal circuit

Supply voltage	9 ... 32 V DC (delivered by the segment coupler)
Current consumption	10 mA $\pm$ 1 mA
Integration time	0 ... 50 s
Rise time	85 ms (ti = 0 sec; 0 – 63 %)

Display and adjustment circuit

For connection to	VEGADIS 10 and/or display module
Data transmission	digital
Connection line	4-wire (standard line)
Max. line length	25 m

Connection

Cable entry	M20 x 1.5 (for cable- $\varnothing$ 5 ... 10 mm)
Screw terminals	for conductor cross-sections of up to 2.5 mm ²
Recommended bus cable types	- SINEC 6XV 830-5AH10 (Siemens AG) - SINEC L2 6XV1 830-35H10 (Siemens AG) - 3079 A (Belden)

Protective measures

Protection ¹⁾	IP 65
Protection class	III
Overvoltage category	III

¹⁾ Use of a suitable seal for the cable in the PG is necessary for maintaining the housing protection. If the seal used does not fit the cable, it should be replaced by a suitable one.

Accuracy (similar to DIN 16 086, DIN V 19 259 - 1 and IEC 770)

Deviation

Reference conditions (acc. to IEC 770)	
- temperature	15°C ... 35°C
- rel. humidity	45 % ... 75 %
- air pressure	860 mbar ... 1060 mbar/86 kPa ... 106 kPa
Determination of characteristics	limit point adjustment acc. to DIN 16 086
Characteristics	linear
Deviation in characteristics	incl. hysteresis and repeatability
- Turn Down 1 : 1	< 0.25 % with accuracy class 0.25 < 0.1 % with accuracy class 0.1
- Turn Down up to 1 : 5	typ. < 0.3 % with accuracy class 0.25 typ. < 0.1 % with accuracy class 0.1
- Turn Down up to 1 : 10	typ. < 0.4 % with accuracy class 0.25 typ. < 0.2 % with accuracy class 0.1

Influence of the ambient temperature

Average temperature coefficient of the zero signal ²⁾	
- Turn Down 1 : 1	< 0.15 %/10 K with accuracy class 0.25 < 0.05 %/10 K with accuracy class 0.1
- Turn Down up to 1 : 5	typ. < 0.225 %/10 K with accuracy class 0.25 typ. < 0.075 %/10 K with accuracy class 0.1
- Turn Down up to 1 : 10	typ. < 0.3 %/10 K with accuracy class 0.25 typ. < 0.1 %/10 K with accuracy class 0.1

Long-term stability

Long-term drift of the zero signal ^{1) 3)}	< 0.1 % per 2 years
---	---------------------

Other actuating variables

Calibration position	upright, diaphragm points downward
Influence of mounting position	< 0.2 mbar/20 Pa
Vibration resistance	mechanical vibrations with 4 g and 5 ... 100 Hz, tested acc. to the regulations of German Lloyd GL-characteristics 2

¹⁾ Relating to the nominal range.

²⁾ In compensated temperature range of 0°C ... +80°C, reference temperature 20°C.

³⁾ Acc. to IEC 770, point 6.1.2 relating to the nominal range.

Operating conditions

Ambient conditions

Ambient temperature	-40°C ... +85°C
- with display module	-20°C ... +70°C
Storage and transport temperature	-40°C ... +85°C
Product temperature, dependent on seal material of the measuring cell	
- Viton	-20°C ... +100°C
- EPDM	-40°C ... +100°C
- Kalrez	0°C ... +100°C

1.4 Approvals and certificates

Approvals

- Ex Zone 2
- StEx Zone 10 (applied for)
- CENELEC EEx ia IIC
- ATEX II 1G EEx ia IIC

If the use of approved instruments is required for certain applications, the appropriate official documents (test reports, test certificates and conformity certificates) must be observed. These are supplied with the respective instrument.

CE conformity

VEGABAR 44 meets the requirements of EMC (89/336/EWG) and NSR (73/23/EWG). Conformity has been judged acc. to the following standards:

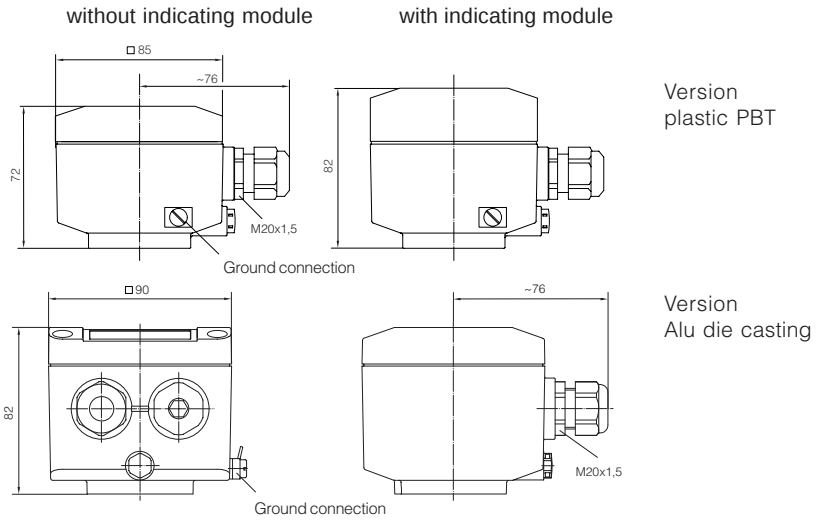
EMC	Emission	EN 50 081 - 1: 1992
	Susceptibility	EN 50 082 - 2: 1995
NSR		EN 61 010 - 1: 1993

NAMUR regulations

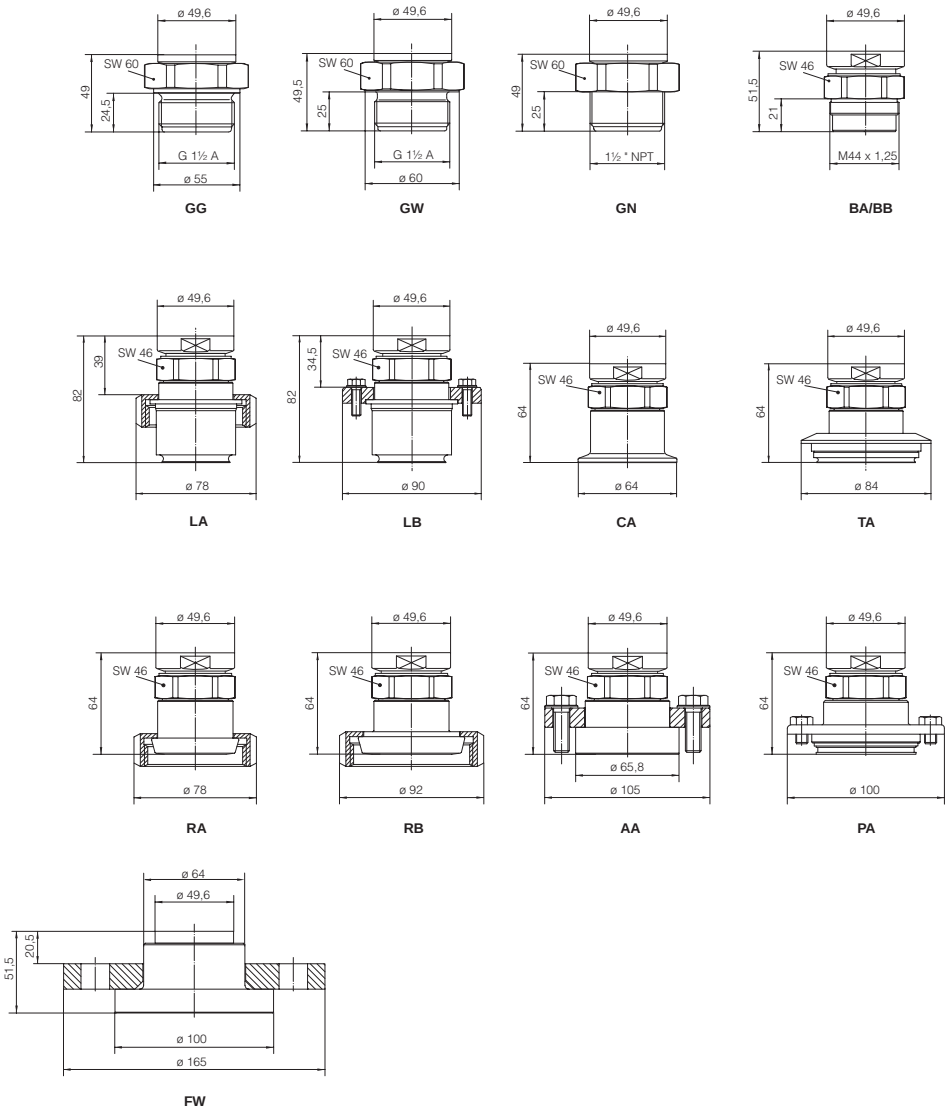
Full compliance with the NAMUR-regulations NE 21, May 1993.

1.5 Dimensions

Housing



Process connections



2 Electrical connection

2.1 Connection instructions

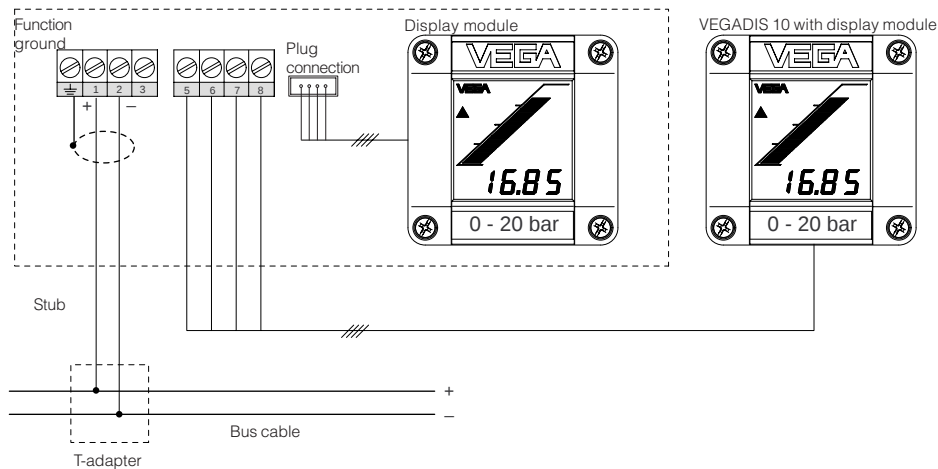
The electronics in VEGABAR 44 requires a supply voltage of 9 ... 32 V DC. The supply voltage and the digital output signal are lead via the same two-wire connection cable to the terminals. The external energy is provided via a segment coupler.

Note the following instructions for electrical connection:

- Connection must be made according to the specific installation standards (e.g. in Germany acc. to the VDE-regulations).
- Electrical connection must have a protective measure against polarity reversal.
- The connection of field instruments is generally made via T-adapters on stubs.
- Screened cable is recommended for connection (cable types see chapter "1.3 Technical data"). The shielding must be grounded on both ends (on the T-adapter and on VEGABAR).
- For use in Ex areas, the installation regulations must be observed.

2.2 Connection diagram

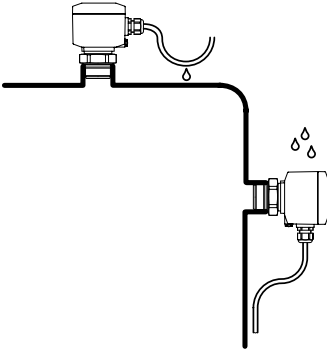
VEGABAR with display module



3 Mounting

3.1 Mounting instructions

VEGABAR can be mounted in any position. Cable entries must point downwards to avoid moisture ingress. For this purpose the housing can be rotated by 330° in relation to the mounting part.



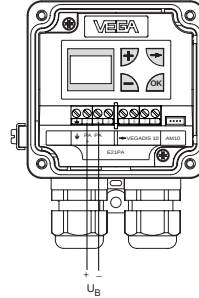
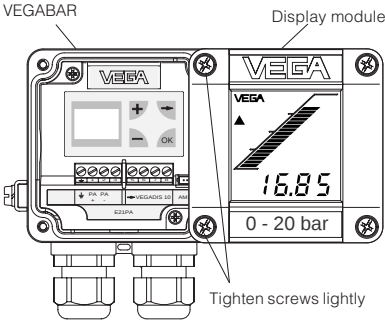
A seal, appropriate for the connection, must be used for mounting. This seal is either supplied with VEGABAR or must be provided by the customer.

3.2 Compensation of the atmospheric pressure

On instruments for gauge pressure measurement, the atmospheric pressure is compensated via a breather facility integrated in the housing.

4 Setup

Electrical connection and setup can be simplified by temporarily mounting the cover or the display module on VEGABAR laterally or displaced downwards.



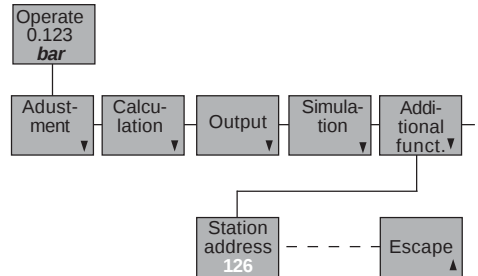
With the arrow key and the "OK" key, you move to the menu item "Instrument address". There you can adjust the address (0 ... 125) with the "+" and "-" key. Save the adjusted address with the "OK" key.

4.1 Adjustment of the Profibus PA address

Since each bus participant must have its own address by which it is identified on the bus, the address must be adjusted before setup of the transmitter. Depending on the instrument version, this is done either with the module "Menu-driven adjustment" or with the mini coding switch.

Address adjustment with the module "Menu-driven adjustment with additional functions"

As a standard feature, the address of the Profibus PA transmitter is set to "126". For modification of the address via the keyboard, the transmitter must be connected to the power supply. This must not be the bus cable. You can use a standard power supply unit or a battery (9 ... 32 V DC, 10 mA).



Also, the other adjustment steps (adjust PA output, adjustment etc.) can be carried out when the DMU is connected to a power supply unit. However, adjustment is also possible at a later time (when the DMU is connected to the bus cable).

Address adjustment with the mini coding switch

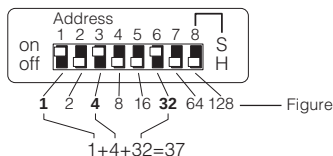
As a standard feature, the address of the transmitter is adjusted as shown (all switches position "on").



When the mini coding switch is set to address 126 and higher (factory setting), the address can be modified via the software (with VVO). However, this is only possible if the transmitter is connected as the only participant with address 126 on the bus. For this reason, we recommend adjusting the address of the sensor via the hardware (switch) before connecting the bus.

Example:

To select address 37, set switch 1 (value 1), switch 3 (value 4) and switch 6 (value 32) to position "on". Set all other switches to position "off".

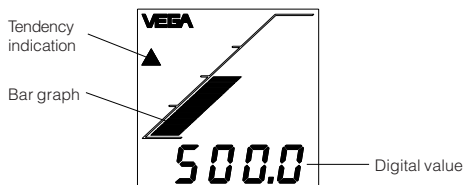


4.2 Display module

Digital value

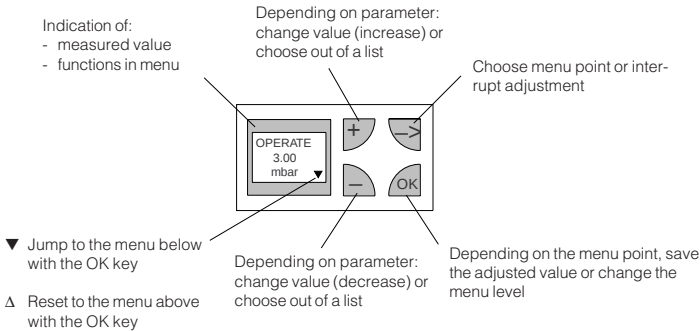
- 4 digits and decimal point

Connection is made via a plug connector according to the "Electrical connection" section.



4.3 Setup with module "Menu-driven adjustment with additional functions"

Adjustment elements



Adjustment with the multifunctional module is menu-orientated and is made via the four keys in conjunction with the text display. The switchover from the measured value indication to the main menu is done with the "OK" key. Use the "→" key to change within a menu from one menu point to another.

Reset

A reset is indicated by the ▲ symbol and enables a jump to the menu above with the "OK" key.

An automatic jump back to measured value indication is triggered 60 minutes after the last key push.

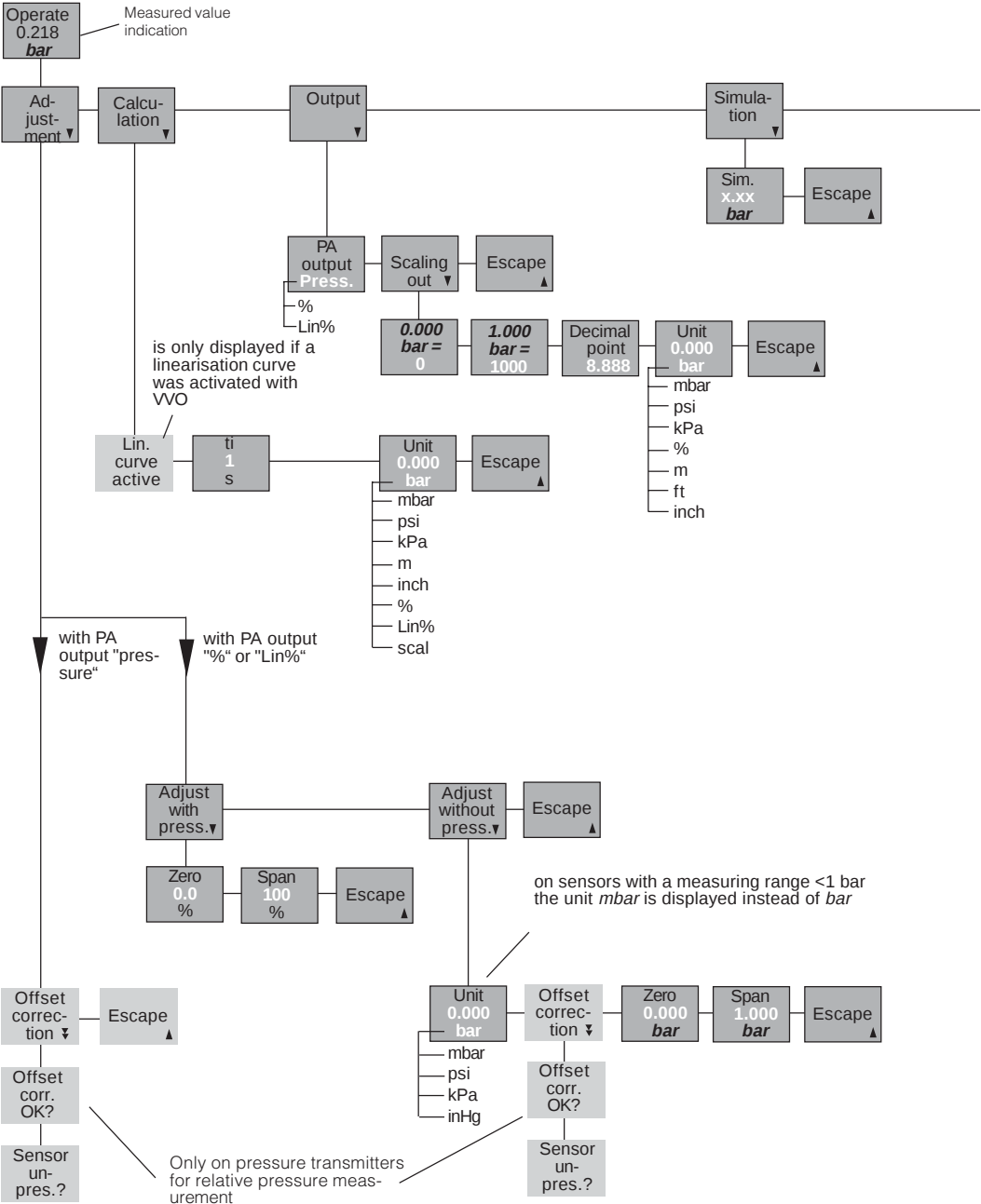
Branching points

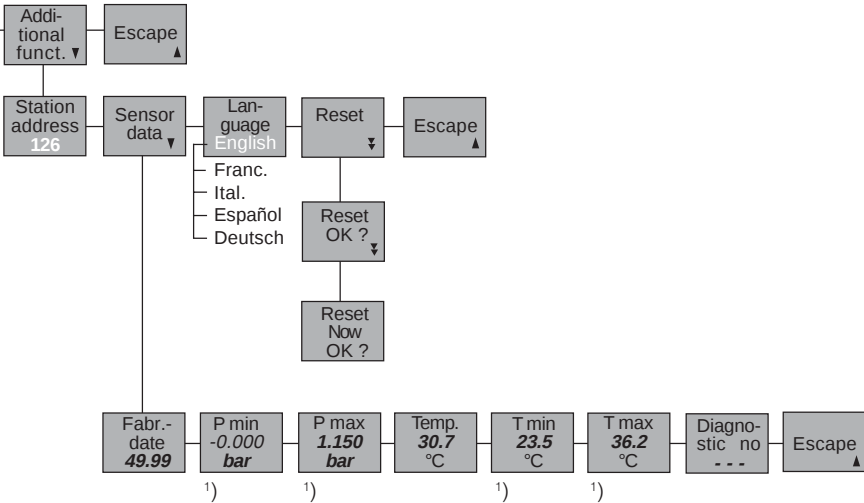
A branching point is shown by the ▼ symbol and enables a jump to the menu below with the "OK" key. In this menu you can find parameters which belong together according to function (possibly in other submenus).

Parameters have no ▲ or ▼ symbol. The value of the parameters can be modified with the "+" and "-" keys or chosen from the list. When these keys are pushed once, the value flashes first. When pushed again, the value is modified. The modified value can be saved with the "OK" key. Push the "→" key to cancel input (without saving the modification).

Certain parameters can be displayed but not modified.

Menu schematic

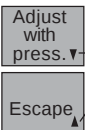




¹⁾ The values indicated here (min. and max. values) can be set to the present value by pushing the "+" and "-" keys simultaneously.



Use the arrow key to move to the right in the menu plan.

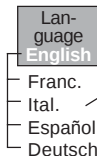


In the menu points with these symbols, you can move to the top or bottom with the "OK" key.



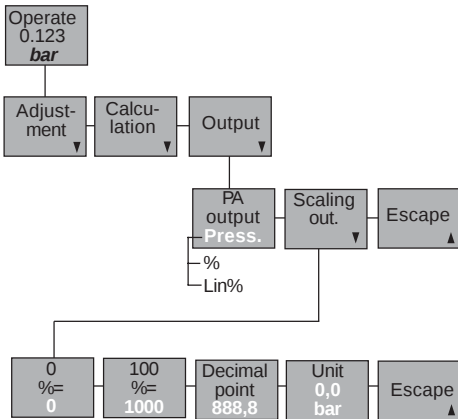
White letters indicate the parameters which can be modified with the "+" or "-" key and saved with the "OK" key.

Sensor or measured value information which cannot be modified in these positions are in italics.



List
These options can be selected with the "+" or "-" key and saved with the "OK" key.

Adjust PA output



As a standard feature, the PA output is set to "Pressure". This means that the DMU outputs only a pressure value which cannot be adjusted. If the DMU should output a level value, the PA output must be set to "%", if the volume of a tank should be outputted, you have to choose "Lin%". Move with the arrow and "OK" key to the menu item "PA output", choose there the requested option with the "+" or "-" key and saved with the "OK" key.

Under "Scaling out." you can modify the number values (min/max), the position of the decimal point and the unit (with the "+" or "-" key the values can be modified, with the "OK" key the adjustments are saved).

Adjustment

(only possible, if "%" or "Lin%" has been chosen for the PA output)

Adjustment taking the current pressure into account (live adjustment)

Live adjustment comprises two steps:

- 1 Adjustment of zero
- 2 Adjustment of span

1 Adjustment of zero

(e.g. process pressure zero or vessel empty)



Set the percentage value to 0.0 % with the "+" or "-" key. Then push the "OK" key.

2 Adjustment of span

(e.g. process pressure or vessel level max.)



Set the percentage value to 100 % with the "+" or "-" key. Then push the "OK" key.

Note:

- A modification of zero does not influence the adjusted span.
- Push "+" and "-" simultaneously for standard adjustment of zero/span. The value jumps directly to 0 %/100 %.
- When pushing the "+" or "-" keys individually, the output current remains at the last value, it takes on the adjusted value only after saving with the "OK" key.
- It is also possible to adjust currents for partial fillings or partial pressures, e.g. 25 % and 75 %. VEGABAR then automatically calculates the values for 0 % or 100 % (only possible with a level difference >3.3 %).

Adjustment without taking the current pressure into account (dry adjustment)

Adjustment without pressure comprises four steps:

- 1 Selection of the unit in which the adjustment is to be carried out
- 2 Offset correction
- 3 Adjustment of zero
- 4 Adjustment of span

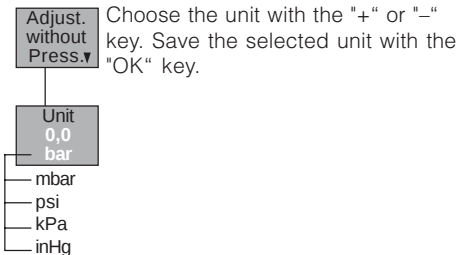
The offset correction (only in gauge pressure mode) defines the reference position for the measurement. It can be carried out:

- before or after adjustment of zero and span
- before or after installation of VEGABAR.

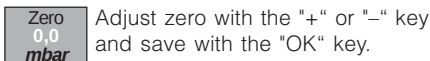
VEGABAR must be unpressurised for the offset correction!

Adjustment without pressure can be carried out with the instrument mounted or dismantled (e.g. workroom). Any ambient pressure has no effect on the adjustment.

1 Selection of the unit

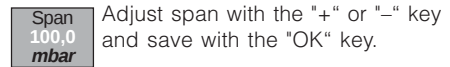


3 Adjustment of zero



Adjust zero with the "+" or "-" key and save with the "OK" key.

4 Adjustment of span



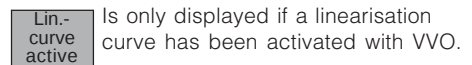
Adjust span with the "+" or "-" key and save with the "OK" key.

Note:

- A modification of zero does not influence the span.
- By pushing the "+" and "-" keys, the output current remains on the last value only after saving with the "OK" key will the output current take on the adjusted value.

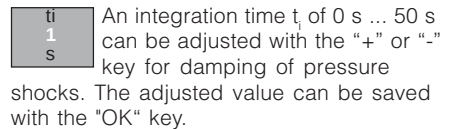
Evaluation

Linearisation curve



Is only displayed if a linearisation curve has been activated with VVO.

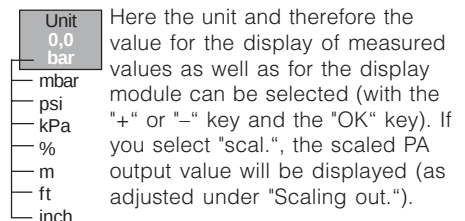
Adjustment of the integration time



An integration time t_i of 0 s ... 50 s can be adjusted with the "+" or "-" key for damping of pressure

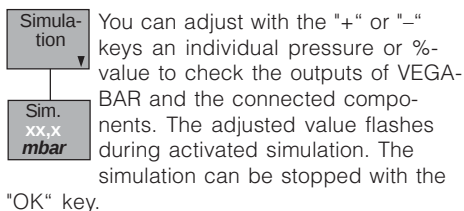
shocks. The adjusted value can be saved with the "OK" key.

Selection of the indicated unit



Here the unit and therefore the value for the display of measured values as well as for the display module can be selected (with the "+" or "-" key and the "OK" key). If you select "scal.", the scaled PA output value will be displayed (as adjusted under "Scaling out.>").

Simulation

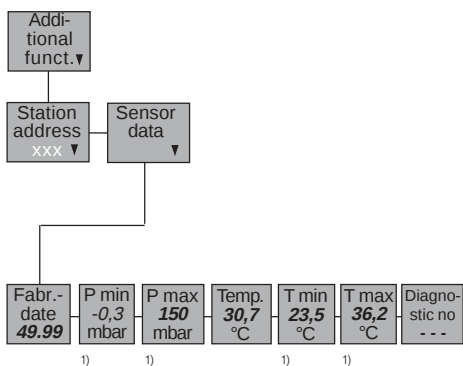


Additional functions

Sensor data

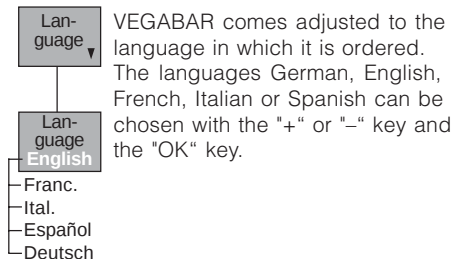
Important sensor data can be displayed via the DOT-matrix for information and diagnostic purposes:

- manufacturing date
- pointer function (p_{min})
- pointer function (p_{max})
- actual temperature value (Temp)
- pointer function (T_{min})
- pointer function (T_{max})
- diagnostic number

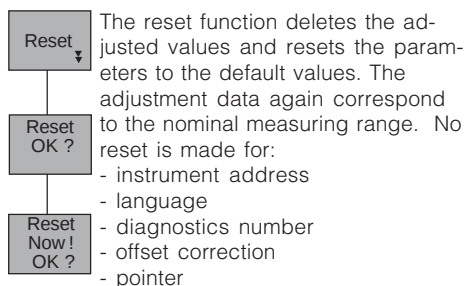


¹⁾ The min. and max. values can be set to the actual value by pushing the "+" and "-" keys simultaneously.

Language



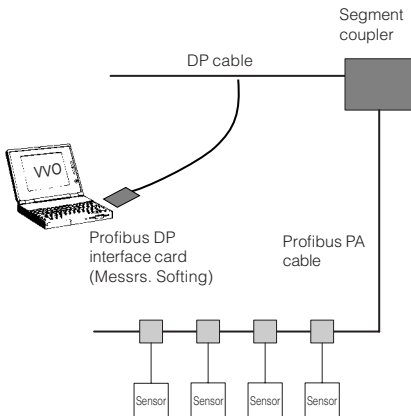
Reset



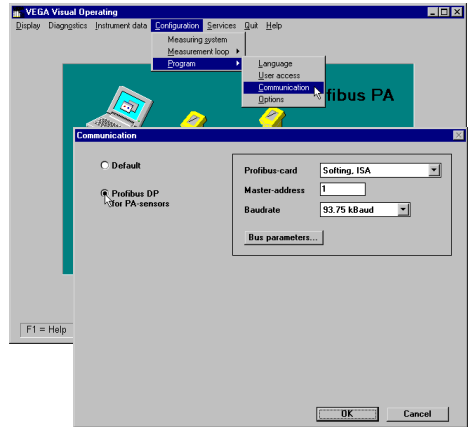
4.4 Setup with adjustment software VEGA Visual Operating (VVO)

VVO connection to the bus cable

For operation of the sensor with the adjustment software VVO, you require a Profibus DP interface card (from Messrs. Softing) in your PC. This card must be used to provide the connection between computer and Profibus DP cable (a connection directly to the sensor or to the Profibus PA cable is not possible). The computer with VVO then has the status "Master, class 2".



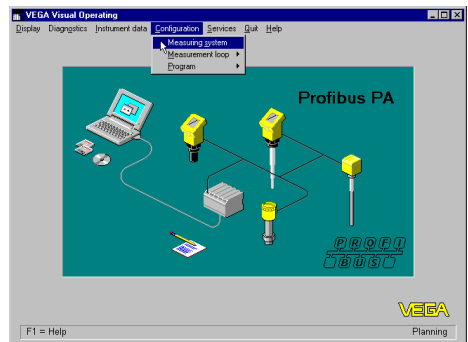
If the computer is connected to the Profibus DP cable, you can start VVO. If the following presentation is shown on the monitor, you have to modify the communication adjustment in VVO. The click to **Configuration**, point to **Program** and click to **Communication**.



First click to "Profibus DP" (for PA sensors). Then select the Profibus card installed in your PC and click to **OK**. Then you have to restart VVO.

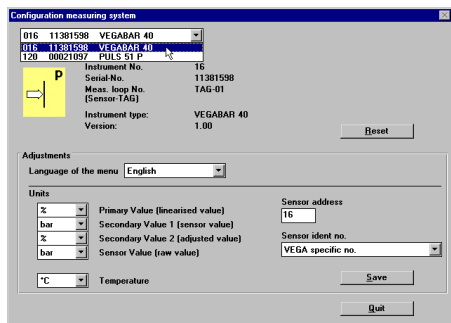
Sensor configuration

After starting VVO as previously described or having made connection to the Profibus, the following presentation will be displayed on the monitor. Click to **Configuration**, then to **Measuring system**.



If you have already connected several VEGA sensors to the bus, you can select the sensor to be configured, in this case VEGABAR 44. The serial number and the bus address of the sensors are displayed to enable clear identification.

The menu language of the sensor can be selected (only relevant with a sensor with menu-driven adjustment) and the units for the output of the sensor values can be set. If address 126 is adjusted on the sensor, you can assign a bus address to the sensor in the field "Sensor address". Then click to **Save**.

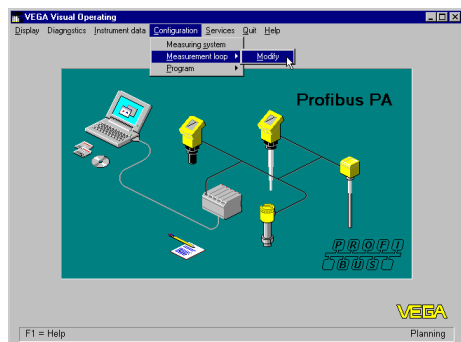


Information about the sensor ident number:

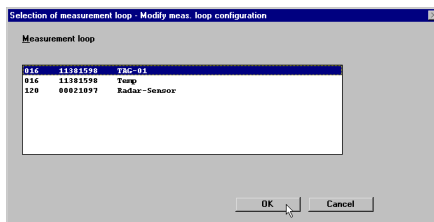
You do not have to modify the adjustment "VEGA specific No.". Only if you want to make sure that VEGABAR can be replaced on the Profibus by a sensor of another manufacturer, do you have to choose the option "Profile specific No.".

Configuration measurement loop

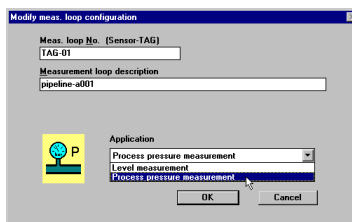
Click to **Configuration**, point to **Measurement loop**, then click to **Modify**.



Now all instruments which are connected to the bus are shown (identifiable by the bus address and the serial number). Notice that in this example the same serial number appears twice. This is a sensor with a measurement loop for pressure and a second measurement loop for temperature. Choose the sensor (the measurement loop) with which you want to create a measurement loop and click to **OK**.

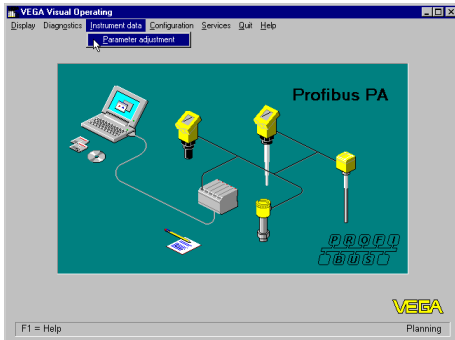


In the window "Modify measurement loop configuration" you can assign a name and a description to the measurement loop. State under "Application" if you want to create a process pressure or level measurement. With **OK** you return again to the window "VEGA Visual Operating". In the following explanations, we assume that you have chosen the application "Process pressure measurement". The adjustment with "Level measurement" differs slightly from the following presentation.

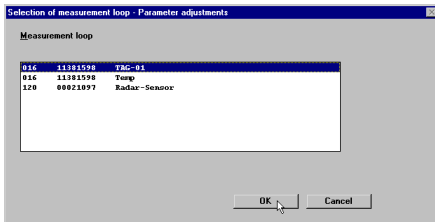


Sensor parameter adjustment – Adjustment

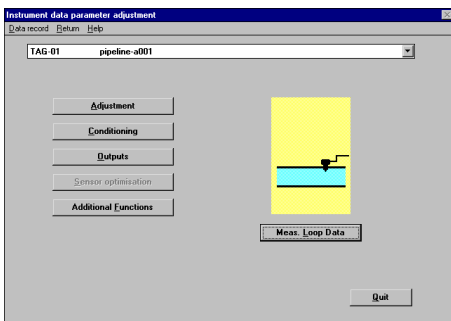
Click to **Instrument data**, then to Parameter adjustment.



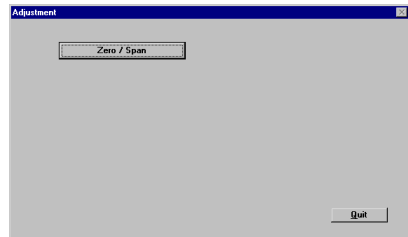
Choose the measurement loop in which you want to make the parameter adjustment and click to **OK**.



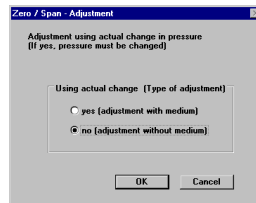
From the window "Instrument data parameter adjustment" you reach all submenus of the sensor. To get familiar with the available options, try out the buttons one after the other. You always return to this window. To carry out the adjustment, click the button **Adjustment**.



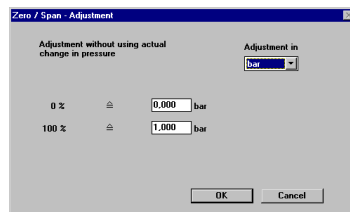
Click in the window "Adjustment" to **Zero/ Span**.



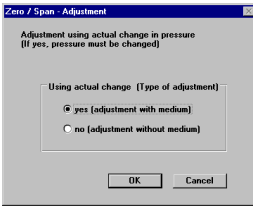
Then in the window "Zero/Span adjustment", you have to choose the type of adjustment. If you want to carry out the "Adjustment without taking the actual product into account" (dry adjustment), click to **no**, then to **OK**.



Here you can choose in which unit the adjustment should be made (mbar, psi, kPa). Then you enter the pressure values corresponding to 0 % and 100 %. Then click to **OK**. The adjustment is now finished.



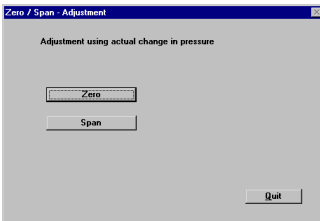
If you want to carry out the "Adjustment taking the actual product into account" (live adjustment), click in this window to **yes**, then to **OK**.



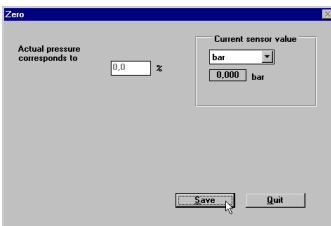
Click to **Zero** or **Span** to carry out the respective adjustment.

Note:

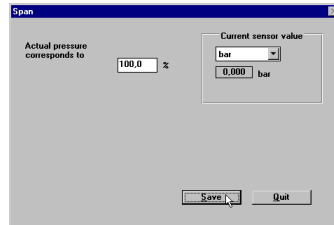
The vessel or the cable must be unpressurised for the zero adjustment! For the span adjustment, it should be possible to generate a defined pressure (e.g. 80 %) in the vessel or on the cable.



In the window "Zero adjustment" you choose in which unit the adjustment should be carried out (mbar, psi, kPa). Then click to **Save**. The Zero adjustment is finished.

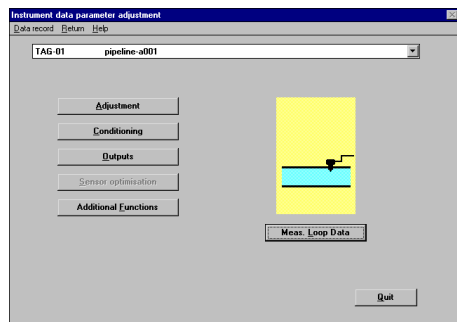


In the window "Span" you first choose in which unit the adjustment should be carried out (mbar, psi, kPa). Enter if you want to edit the percentage or the current value. If you want to edit the percentage value, enter the value (e.g. 80 %). Then click to **Save**. The span adjustment is finished.

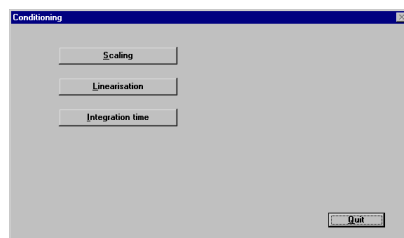


Sensor parameter adjustment – Linearisation curves

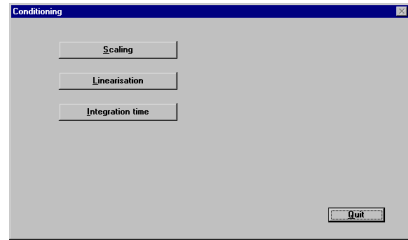
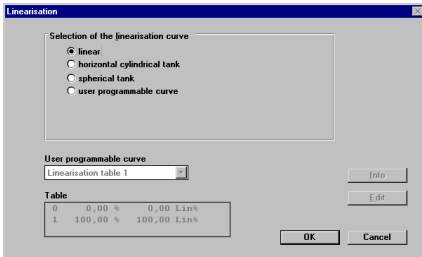
Click in the window "Instrument data parameter adjustment" to **Conditioning**.



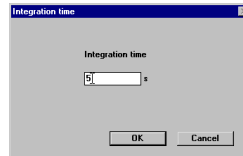
Click in the window "Conditioning" to **Linearisation**.



In the window "Linearisation" you can choose the linearisation curves of a cylindrical or a spherical tank. If you choose a user programmable curve, you can then click to **Edit** and open the program "Tank Calculation". With this program you can calculate the curves of different tank shapes (see the manual "VEGA Visual Operating"). After selection of the curve, click to **OK**.

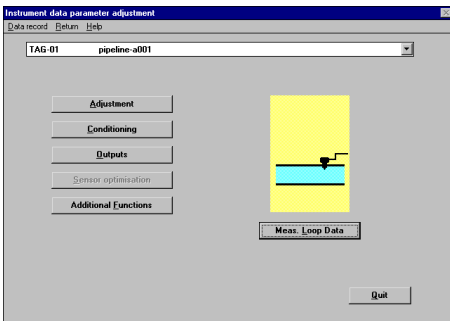


In the window "Integration time" you can enter a time interval of max. 50 seconds. Then click to **OK**.



Sensor parameter adjustment – Integration time

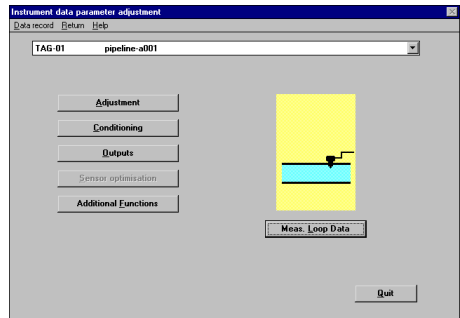
Click in the window "Instrument data parameter adjustment" to **Conditioning**.



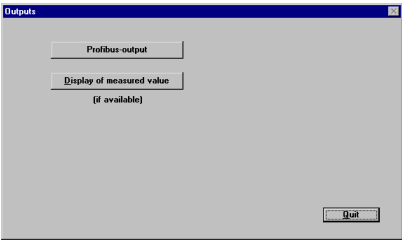
Click in the window "Conditioning" to **Integration time**.

Sensor parameter adjustment – Outputs

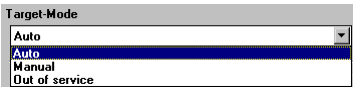
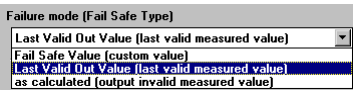
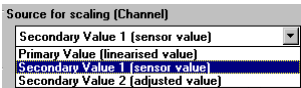
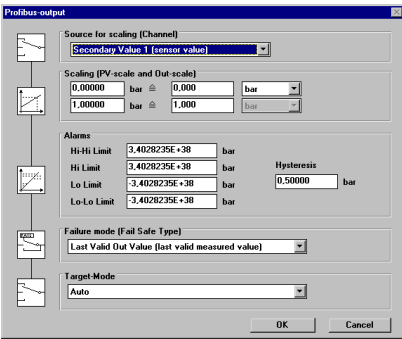
Click in the window "Instrument data parameter adjustment" to **Outputs**.



Click in the window "Outputs" to **Profibus output**.

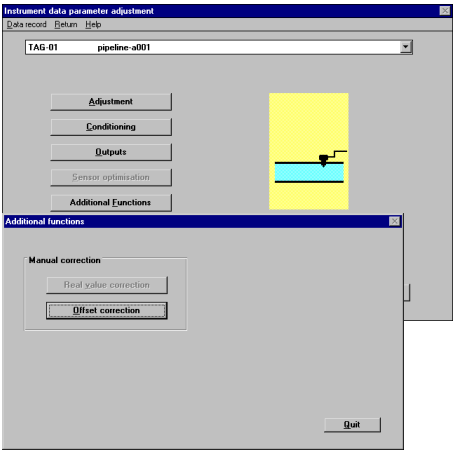


In the window "Profibus output" you can determine the options for the Profibus output (acc. to Profibus PA instrument profile). Confirm your adjustments with **OK**.

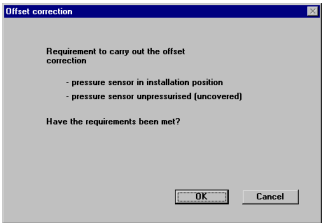


Sensor parameter adjustment – Offset correction

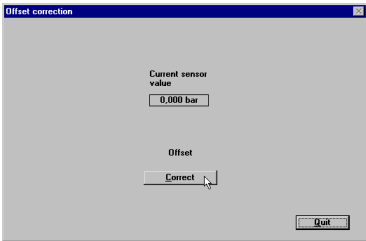
Click in the window "Instrument data parameter adjustment" to **Additional functions**, then in the window "Additional functions" to **Offset correction**.



Confirm the question with **OK**, in case the conditions are met.

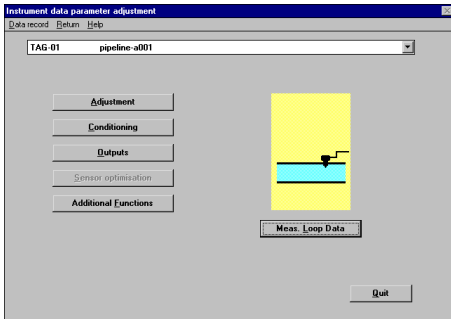


Click in the window "Offset correction" to **Correct**.

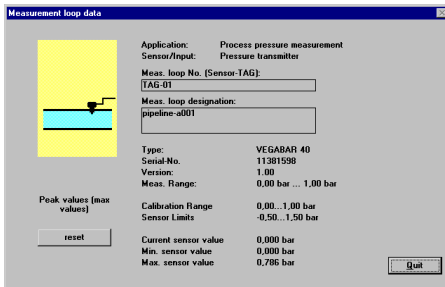


Pointer function

Click in the window "Instrument data parameter adjustment" to **Meas. loop data**.

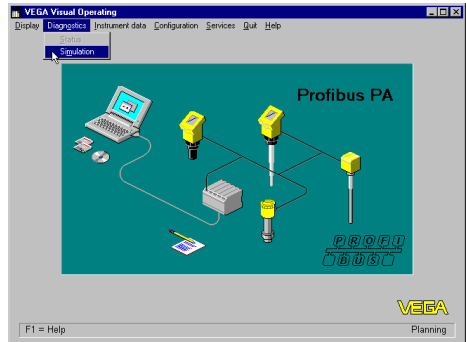


In the window "Meas. loop data" all available, actual sensor values and the peak values (pointer function) are displayed. With the button **reset** you can reset all displayed peak values to the actual value all at once.

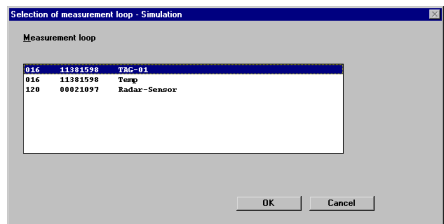


Simulation

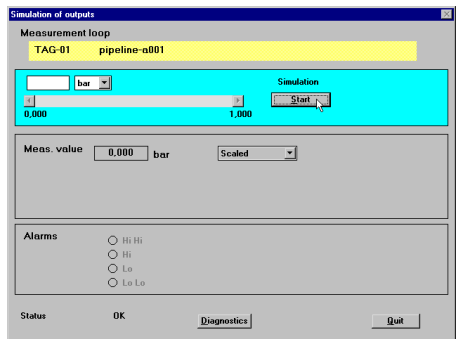
For checking outputs of VEGABAR and connected instruments and components, a pressure can be simulated. Click to **Diagnostics**, then to **Simulation**.



Choose the requested measurement loop and click to **OK**.



In the window "Simulation of outputs", you click to **Start** to begin the simulation. With the buttons "<" and ">" (or the slide switch) you can adjust values between -10 % and 110 %. Click to **Stop** to terminate the simulation.

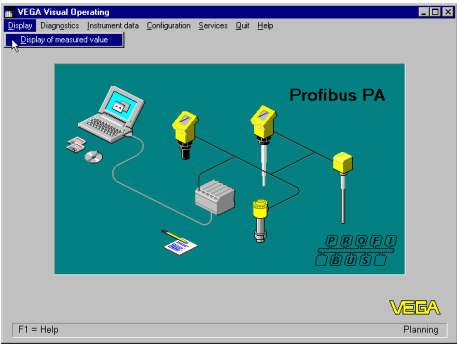


Note:

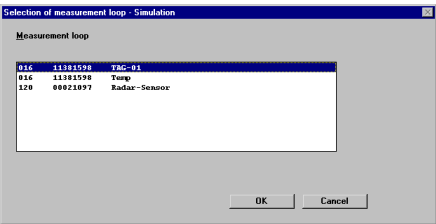
The simulation mode is not terminated automatically, but remains active until you switch it off!

Display of measured value

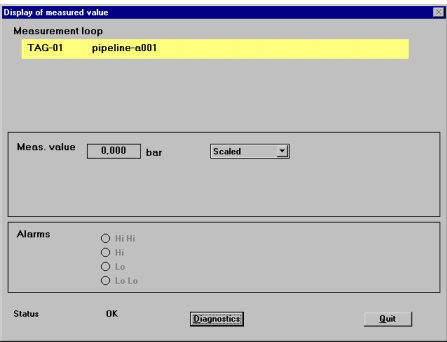
The actual values of the measurement loops can be displayed from the main menu. Click to Display and then to Display of measured value.



Choose the requested measurement loop and click to **OK**.



In the window "Display of measured value" you can choose the unit in which the measured value should be displayed. In addition, you will see the elec. current. By clicking to **Quit** you return to the window "VEGA Visual Operating".



5 Diagnostics

5.1 Maintenance

VEGABAR process pressure transmitters are maintenance-free.

5.2 Failure rectification

Fault signals

VEGABAR provides maximum reliability through its self-test and continuous self-monitoring. If however malfunctions occur, VEGABAR diagnosis distinguishes between atypical process conditions and faults in the VEGABAR.

Atypical process conditions

Exceeding or falling short of measuring range limits (fault signal extinguishes when the measured value is again in the measuring range).

Failure in VEGABAR

Failure in the electronics, interference or damage in the measuring cell.

The following table assists in analysis of fault signals.

Reason	Fault signal via	
	DOT-matrix	Bar graph Digital indication
Clearly outside measuring range	"OPERATE ???? bar", no more adjustment possible	Bar graph 0 % or 100 % digital value flashes, tendency indication active
Overload range of the meas. cell		Bar graph 0 % or 100 %, for digital value four segments flash
Failure in VEGABAR		all segments flash

On instruments with menu-driven adjustment with additional functions, the possible reasons are displayed under the menu items "Diagnosis-no." in case of failure.

Diagnosis-no.	Meaning
1	No frequency from C/f-converter
2	Frequency signal of the capacitor not within the limit values
3	Frequency signal of the reference capacitor not within the limit values
4	Frequency signal temperature not within the limit values
7	Communication with EEPROM disrupted
9	Error in EEPROM CRC-checksum
11	Process connection or electronics module has been exchanged (appears for approx. 20 s after switching on for the first time after exchange)

Troubleshooting

If the displayed value does not correspond to the level in the vessel or to the process pressure, the following measures must be taken:

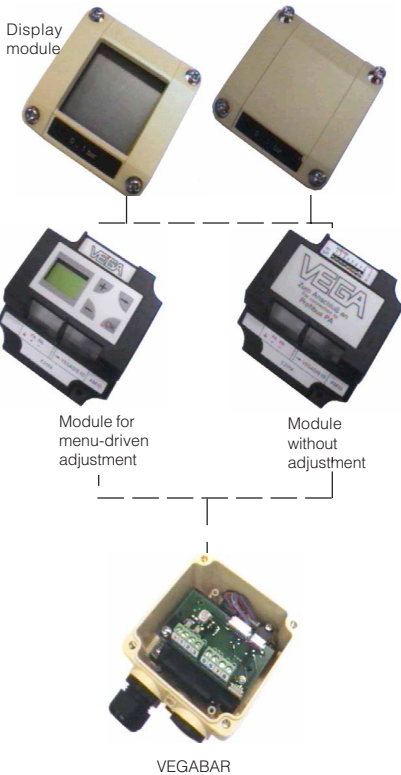
- check the pressure compensation (only with gauge pressure measuring ranges)
- check the electrical connection.

Checking pressure compensation

Open the housing of VEGABAR. The measured value must not change. However if the displayed value changes, compensation of the atmospheric pressure is not ensured and will lead to distortion of the measured value. Check the breather on the VEGABAR housing.

6 Instrument modification

6.1 Exchange of adjustment modules



Exchange of the adjustment module

Removal of the adjustment module

- Separate VEGABAR from the power supply
- Remove the screws on the upper side of the housing and remove the cover or the display module
- Disconnect connection cables from the terminals, and if applicable, pull out the plug connection of the display module
- Remove the two screws of the adjustment module
- Remove adjustment module and pull out plug connection

Insertion of an adjustment module

- Plug the plug connection of the new adjustment module into the plug-in socket of the electronics module
- Fasten the new adjustment module
- Reconnect the connection cables, and if applicable, also the cable from the display module
- Replace the cover or the display module of VEGABAR
- Reconnect VEGABAR to power supply

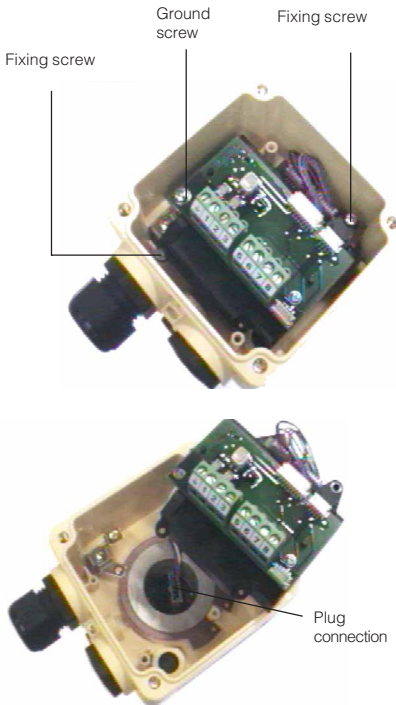
The modular construction of VEGABAR allows retrofitting, interchange or removal of the display module. Data previously saved (e.g. adjustment values) are not stored in the adjustment module but in an EEPROM of the electronics module and therefore readjustment is not necessary. The connection of the modules is made via a 4-pole plug connection.

6.2 Exchange of electronics

You first have to remove the adjustment module as described in chapter "6.1 Exchange of adjustment modules" to exchange the complete electronics module of VEGABAR.

Note:

When switching on the first time (connection of power supply) after exchange of the electronics unit, it will take approx. 20 s until the actual measured value is displayed.



- Then remove the ground screw and the two smaller fixing screws that hold the electronics module to the housing
- Pull the electronic unit to the top and pull out the plug connection
- Proceed in reverse sequence when installing the new electronics module

6.3 Exchange of the hygienic form seal

The ceramic measuring cell is sealed by a gapless, radial form seal on VEGABAR 44 process pressure transmitter with hygienic fitting. This form seal can be exchanged by the user without readjustment being necessary. The criteria and time periods for such an exchange are defined by process conditions and hygienic requirements.

Important:

Only use the original VEGA replacement part as seal ring!

Note the following procedure when exchanging the seal.

Removal procedure:

- 1 Pressure transmitter should be unpressurized (switch off process pressure or empty vessel).
- 2 Loosen the hexagon head screw (46 mm across flats) (1) by turning counter-clockwise

Note!

The process connection (2) (i.e. compression nut) must not be loosened!

- 3 Completely loosen pressure screw and remove the pressure transmitter from the process connection

Note:

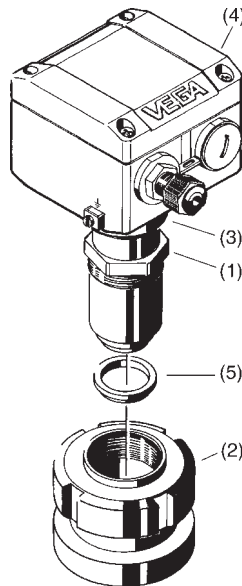
Should the pressure transmitter turn by loosening the pressure screw, it can be held by the adapter (3) with a wrench (SW 46).

- 4 Slightly lift the form seal (5) (with a knife or something similar) and loosen it from the ceramic measuring cell
- 5 If the form seal (5) does not cover the measuring cell, it should be carefully removed from the process connection.

Installation procedure:

- 6 Pull a new form seal (5) over the measuring cell (the conical end should point towards the process connection!).
- 7 Insert the pressure transmitter carefully into the process connection by turning clockwise.
- 8 Tighten hexagon head screw (46 mm) (1) to its fixed position (45 Nm).
- 9 Return the housing (4) of the pressure transmitter to its original position

Exchange of the form seal is now finished. Ensure appropriate disposal of the removed seal.



- 1 Hexagon pressure screw
- 2 Process connection
- 3 Adapter
- 4 Housing
- 5 Form seal



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The statements on types, application, use and operating conditions of the sensors and processing systems correspond to the latest information at the time of printing.

Technical data subject to alterations