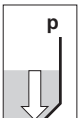
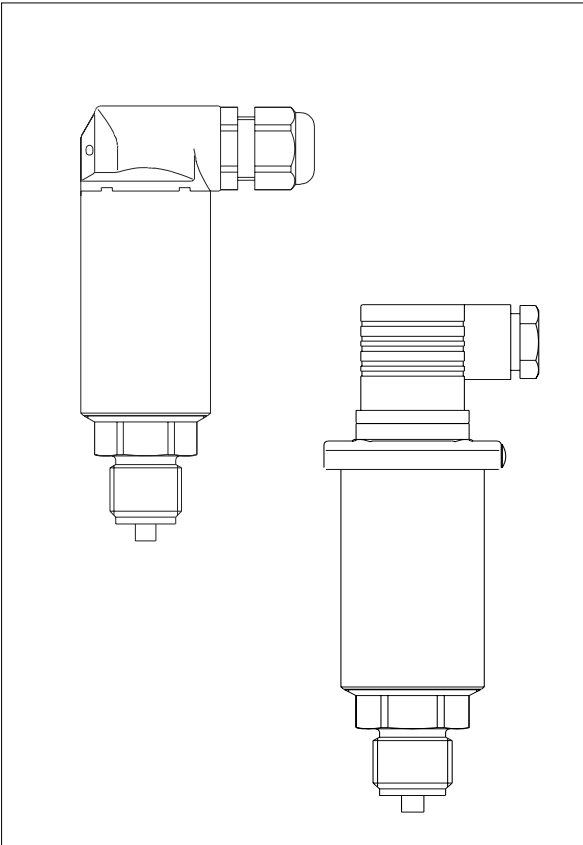


# Operating instruction

## VEGABAR 14



**Contents**

Safety information .....	2
1 Product description .....	3
2 Mounting .....	4
3 Electrical connection .....	4
4 Set-up .....	5
5 Technical data .....	6

**Safety information**

The described module must only be installed and operated as described in this operating instruction. Please note that other action can cause damage for which VEGA does not take responsibility.

## 1 Product description

VEGABAR 14 sensors are used for continuous pressure measurement. The pressure of a gas or the hydrostatic pressure of a liquid effects a capacitance change on the completely dry ceramic diaphragm of the meas. cell. The integral processing electronics converts this capacitance change on the ceramic diaphragm into a pressure proportional electrical current of 4 ... 20 mA um.

### Principle: Plate capacitor

The dry ceramic-capacitive meas. cell CERTEC® is made of high resistance ceramic.

A ceramic diaphragm is located on the ceramic basic body. Ceramic basic body and diaphragm are the plates of a capacitor. The "plate distance" between the ceramic basic body and the diaphragm is 0,12 µm (as comparison, the thickness of a human hair is 0,25 µm).

The diaphragm moves in this small range of 0,1 µm and effects via the variable "plate distance" capacitance changes which are provided by the meas. electronics as meas. signal.

### Up to 80-times overload resistant

In case of overload, the distance between ceramic basic body and diaphragm will be completely overcome and the diaphragm is flush to the ceramic basic body. The overload does not cause additional "bending" of the diaphragm, so that the overpressure forces can be collected and can only be limited by the mechanical resistance of the transmitter housing.

### Application features

- Relative pressure transmitter
- Diameter of the sensor element Ø 28 mm
- Absolutely dry
- Mechanically up to 80-times (dependent on the meas. range) overload resistant
- Extremely longterm stable
- High resistance and rugged ceramic meas. cell

### Adjustment

No special adjustment necessary. Acc. to the adjusted meas. range, the sensors collect a pressure proportional 4 ... 20 mA current.

e.g.: meas. range 0 ... 2,5 bar

0 bar: the sensor collects a current of 4 mA.

2,5 bar: the sensor collects a current of 20 mA

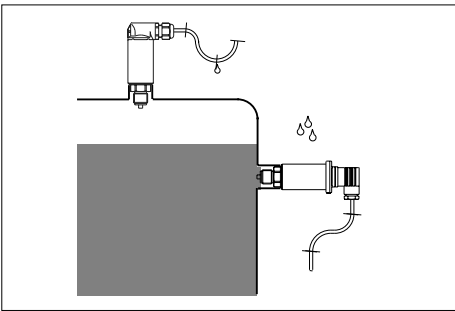
As factory setting, the sensors are adjusted such that in unpressurized condition they collect 4 mA.

In certain installation positions it is possible, that this "zero point" must be corrected. The sensor allows a correction of the zero point of +5% ... -5% (see drawing on page 5).

## 2 Mounting

VEGABAR 14 pressure transmitters can be mounted in any individual position. For mounting please use an appropriate process seal (copper, Aluminium, steel-Viton etc.). Try to find an installation position where the cable entry points downwards. This ensures that humidity can drain off more easily and the danger of clogging of the breather facility is reduced.

This is mainly valid for mounting outside or in humid areas, e.g. on cooled or heated vessels.



### Compensation of the atmospheric pressure

- The atmospheric pressure is reached
- either via a small PTFE-breather facility in the socket of the connection plug (sensor with plug connection IP 65) or
  - via a breather capillary in the connection cable (sensor with direct bent cable outlet in IP 67).

On sensors with direct integral cable outlet, the pressure compensation is made via the breather capillaries on the terminal position of the connection lines, e.g. in VEGABOX 01.

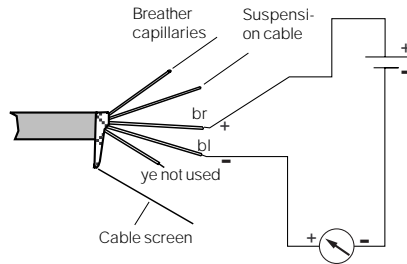
Note the following:

- on the terminal position there must be the same atmospheric pressure than on the sensor.
- the terminal position must be in dry environment.

## 3 Electrical connection

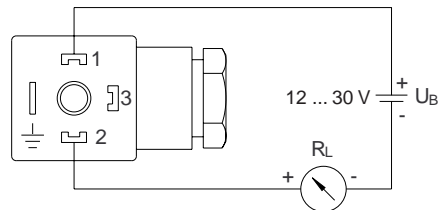
VEGABAR 14 pressure transmitters must be fed with the same DC voltage of 12 ... 30 V. Dependent on the available process pressure, the sensor collects then a current of 4 ... 20 mA auf.

### Sensor with direct cable outlet



### Sensor with plug connection

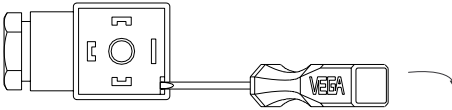
View from the bottom part of the plug.



## 4 Set-up

### Plug connection

Remove the plug from the sensor and push / pull the plug screw out of the plug. Remove the plug insert acc. to the following figure with a small screwdriver out of the plug housing. Hence the screw terminals of the plug are accessible for cable connection.



### Cable connection

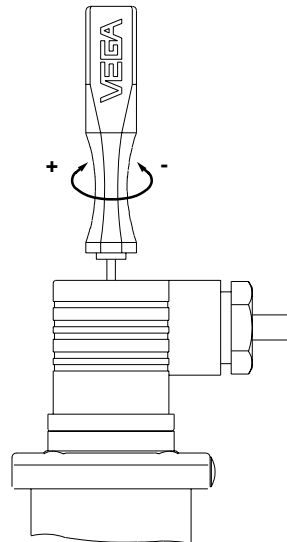
Connect

- the positive pole to terminal 1
- the minus pole to terminal 2
- the cable screen to terminal  $\ominus$

VEGABAR 14 collects after connection of the supply voltage a pressure proportional current of 4 ... 20 mA. In unpressurized condition (zero point) the sensors collect a current of 4 mA.

### Zero point correction

Dependent on the installation position, it can be exceptionally necessary, to correct the zero point. The zero point (current collected by the unpressurized sensor) can be modified in the range of approx. 3 ... 5 mA. If necessary adjust the zero point to 4 mA. Hence pull out the plug and remove the plug screws. Now insert the plug again to the sensor and insert the 2 mm-screwdriver (attached to the instrument) approx. 45 mm into the hole of the plug screw. You reach a small potentiometer by which the zero point can be adjusted.



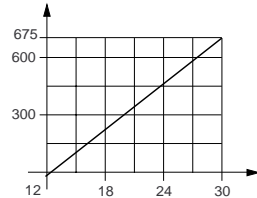
### Note:

When you adjust the zero point to e.g. 4,5 mA the sensor collects a current of 20,5 mA at nominal pressure (shifting of operating range).

## 5 Technical data

### Power supply

Supply voltage	12 ... 30 V DC
Current limitation	to approx. 23 mA
Interference	> 21,6 mA
Max. permissible load	see diagram:



### Meas. range

Nominal meas. range in bar	0 ... 0,1/0,25/0,4/0,6/1,0/1,6/2,5/4,0/6,0/10/16/25/40/60	
Overpressure resistance in bar	8 (0 ... 0,1)	25 (0 ... 4,0)
	8 (0 ... 0,25)	25 (0 ... 6,0)
	10 (0 ... 0,4)	30 (0 ... 10)
	10 (0 ... 0,6)	40 (0 ... 16)
	10 (0 ... 1,0)	40 (0 ... 25)
	20 (0 ... 1,6)	80 (0 ... 40)
20 (0 ... 2,5)	120 (0 ... 60)	

### Accuracy <sup>1.)</sup>

Average temperature coefficient of the zero signal	< 0,15 %/10 K
Deviation in characteristics relating to meas. range	< 0,5 %
Hysteresis relating to meas. range	< 0,1 %
Longterm stability	< 0,15 % / year

### Ambient conditions and materials

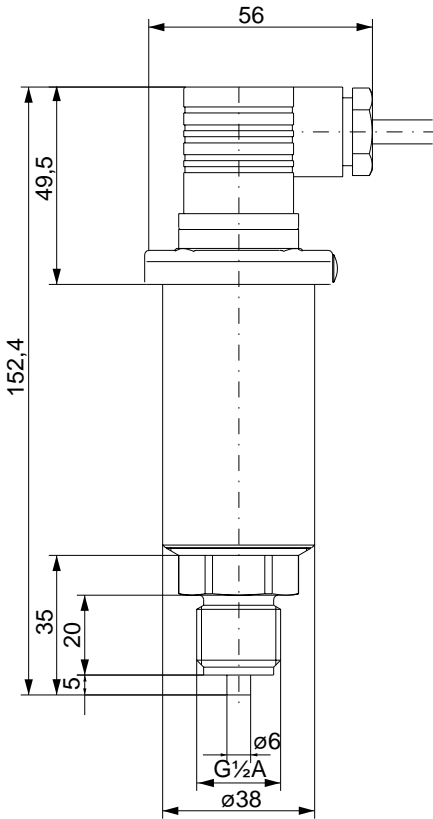
Ambient temperature	- 20 °C ... 85 °C
Product temperature	- 20 °C ... 100 °C
Storage and transport temperature	- 50 °C ... 100°C
Protection	IP 65 (with plug connection; DIN 43 650 A) IP 67 (with direct cable outlet)
Materials wetted parts	1.4301 / Al <sub>2</sub> O <sub>3</sub> (ceramic meas. cell)
Housing material	brass nickel-plated
Connection plug / cable outlet	PA

### General data

Weight	450 g
Cable entry	Pg 9 (cable diameter 5 ... 9 mm)
Screw terminals	max. cross-section area of conductor 2,5 mm <sup>2</sup>
Process connection	G 1/2 A

1.) acc. to IEC 770

**Dimensions**





**VEGA Grieshaber KG**  
**Am Hohenstein 113**  
**D-77761 Schiltach**  
**Phone (0 78 36) 50 - 0**  
**Fax (0 78 36) 50 - 201**  
**e-mail [vega@vega-g.de](mailto:vega@vega-g.de)**



The statements on types, application, use and operating conditions of the sensors and processing systems correspond to the actual knowledge at the date of printing.

Technical data subject to alteration