Influences limits

	zero - error	end - error	linearity - error	resolution	hyster.
DS 200-2					
0...200 Pa	± 0,5 %	± 0,5 %	± 0,25 %	0,1 %	1 %
0...150 Pa	± 0,75 %	± 0,6 %	± 0,4 %	0,2 %	0,7 %
0...100 Pa	± 1 %	± 0,7 %	± 0,5 %	0,2 %	0,5 %
0...50 Pa	± 2 %	± 1 %	± 1%	0,3 %	0,5 %
DS 200-10					
0...1000 Pa	± 0,5 %	± 0,5 %	± 0,25 %	0,1 %	0,2 %
0...500 Pa	± 0,7 %	± 0,7 %	± 0,5 %	0,2 %	0,2 %
0...300 Pa	± 0,9 %	± 0,9 %	± 0,9 %	0,3 %	0,2 %
0...200 Pa	± 1 %	± 1 %	± 1,25 %	0,3 %	0,2 %
DS 200-60					
0...6000 Pa	± 0,5 %	± 0,5 %	± 0,25 %	0,1 %	0,2 %
0...4000 Pa	± 0,7 %	± 0,7 %	± 0,4 %	0,15 %	0,2 %
0...3000 Pa	± 0,9 %	± 0,9 %	± 0,6 %	0,2 %	0,2 %
0...2000 Pa	± 1 %	± 1 %	± 0,75 %	0,25 %	0,2 %

Temperature drift

zero point: ± 0,3 % / 10 K
end point: ± 0,2 % / 10 K

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03.13

Differential Pressure Sensor DS 200

Low pressure sensor with LCD, analog output and 4 selectable measuring ranges

- ❑ **Diagraphm element with differential transformator**
- ❑ **Measurig range from 0...50 Pa up to 0...6000 Pa**
- ❑ **4 calibrated measuring ranges, selectable with DIP- switch**
- ❑ **Alphanumeric LCD-Display**
- ❑ **Indication of differential pressure and flow rate**
- ❑ **Analog output 0/2...10 V or 0/4...20 mA**
- ❑ **Compact plastic housing IP 54**
- ❑ **Supply voltage 15...30 Vdc or 24 Vac**

Description and operatin

Safty instructions

Attention! Read this instruction carefully, before you insert connect this item.Only quallified personal who is familar with installation, construction and operating of the equipment should work around these sensors.

Application

The differential pressure sensor DS200 serves for measuring low pressure of non-agressive gases, particulary of air.

This device is mainly for e.g. in air conditioning systems for fan controlling, for pressure controll of rooms or filter controlling.

Another application is the measurement of air flow, for example with Venturi tube or measuring grid.

Description

The differential pressure to be measured affects to both sides of a silicone diagraphm, which is displaced against a measuring spring. The displacing of the diagraphm is converted into an electrical output signal by a differential transformator with suitable electronics.

The device has four calibrated measuring ranges, that are selectable via a DIP switch.

A two line alphanumeric LCD display shows the measured differential pressure in the physical unit. In conjunction with a pressure transduce (orifice, venturi or pitot tube) directly, the flow in a pipeline can be displayed. Therefore, the differential pressure is square rooted, and multiplied by a factor. This factor is stored in the device, and can be adjusted.

A damping of the output signal and the display at varying readings can be adjusted in three stages using DIP switches.

The differential pressure sensor DS200 provides an analog output signal from 0/2...10 V or 0/4...20mA

To supply this device, a voltage of 15...30Vdc or 24Vac is required.

Technical Data

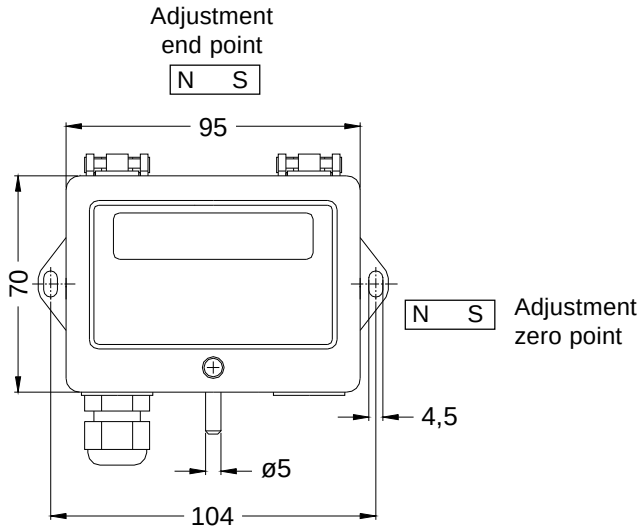
Measuring medium:	Air or non-aggressive gases
Measuring principle:	Silicon diaphragm with spring and differential transformator
Lowest span:	0...50 Pa
Highest span:	0...6000 Pa
Overpressure protection:	0,2 bar
Static pressure:	max. 0,2 bar
Pressure connections:	hose liners 5 mm ø
Case:	Case polyamid, cover ABS
Supply voltage:	15...30 Vdc or 24 Vac ± 15 % Elctronic protection against faulty polarization
Current consumption:	approx. 12 mA
Output:	0/2...10 V or 0/4...20mA selectable with jumper
Charateristic:	linear or square root
Display:	LCD-Display, 2x16 characters
Damping:	adjustable in three stages
Protection class:	IP 54 acording EN60529
Ambient temperature:	0...+50 °C
Weight:	approx. 90 g
Mounting:	vertical, position dependence by turning of 90°: approx. 0,25 mbar
Interference emmission:	According EN 50081-2, EN 50082-2, CE
Influences limits:	see page 8

Readjustment of the end point and the zero point

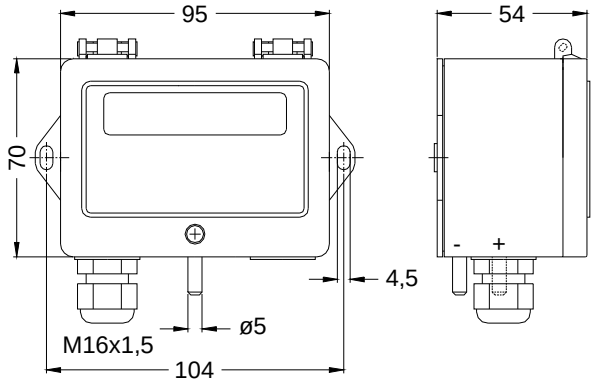
The zero point and the end point can be readjust with a small bar magnet

Readjustment of the zero point:
Disconnect pressure connections from the device.
Touch with the bar magnet the side of the zero point adjustment.
The output signal represents a zero.

Readjustment of the end point:
Attention!
For an accurate end point adjustment, an exact pressure calibrator is required!
Set the desired measuring range with DIP switches.
Connect the device withe the pressure calibrator.
Give the pressure to the device.
Touch with the bar magnet the side of the END point adjustment.
The final value of the differential pressure appears after a short time on the display and the output adjusts to 10 V.



Dimensions



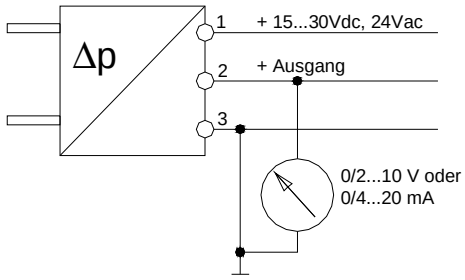
Mounting

The differential pressure controller DS200 is designed for wall mounting.
The installation must be done vertically. The connection of the pressure lines is performed with plastic tubing, inner diameter 4mm.

The device is position depended, therefor it is important that the assembly ist vertical.

Electrical connenction

After opening the front cover, the electrical connection is made by using screw terminals.



Measuring range selection, settings

Measuring range selection:
The measurement range is set using DIP switches No. 5 and No. 6.

	DS 200-2	DS 200-10	DS 200-60	DIP 5	DIP 6
Measuring range:					
MB1:	0...200 Pa	0...1000 Pa	0...6000 Pa	off	off
MB2:	0...150 Pa	0...500 Pa	0...4000 Pa	on	off
MB3:	0...100 Pa	0...300 Pa	0...3000 Pa	off	on
MB4:	0...50 Pa	0...200 Pa	0...2000 Pa	on	on

Damping:
Varying measurement values can be damped using DIP switches No. 1 and No. 2

	DIP 1	DIP 2
no damping	off	off
Time constant 0,5 s	on	off
Time constant 1s	off	on
Time constant 1,5 s	on	on

Signal range of analog output:

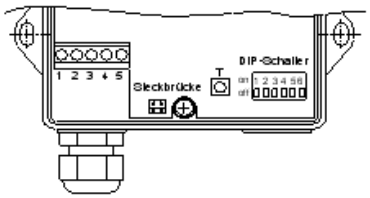
		Voltage output	Current output
DIP 3	off	0...10 V	0...20 mA
DIP 3	on	2...10 V	4...20 mA

Characteristic of the analog output:
With DIP switch No. 4, the characteristic of the analog output can be switched between differential proportional (linear) and flow proportional (square root).

		Charateristic
DIP 4	off	linear
DIP 4	on	square root

Selection of analog output:

The analog output can be switched by a jumper, shown in fig 1.



Jumper	output
above	0/2...10 V
below	0/4...20 mA

fig 1

Adjusting the flow coefficient

By pressing and holding the key „T“ a flow coefficient can be adjusted. Flow is then calculated according to the following equation:

$$Q = c \cdot \sqrt{\Delta p}$$ with

Q = flow rate in m^3/h
c = flow coefficient
Δp = differential pressure at the venturi tube or similar

Practicable coefficients of ‘c’ are in the range of c = 0.0 ... 399.9
If the coefficient ‘c’ is set to c = 0 the device works as differential pressure sensor and the indication of flow Q is excluded.

How to set a new coefficient ‘c’:

- press and hold the key „T“ for at least 5 seconds

  => display will change to: 1. line: „Faktor c= ...,.
  2. line: „Taste od. warten“

Note:
- The actually displayed coefficient ‘c’ is stored in the EEPROM of the device.
- If now the key „T“ will not be pressed for 10 seconds, the device returns onto the measuring mode.
  By this the stored coefficient ‘c’ can be indicated without changing it.

- press key „T“ (approx. 1 second)

  => now the device will change to the input mode.
  first digit to be set is blinking.

  => display is showing: 1. line: „Faktor eingeben“
  2. line: „c=___,_ “

- hold key „T“

  => the blinking digit is increasing now, release the key „T“ at the desired value.
  The next digit is now blinking.

- after all 4 digits are set by this way, the device returns to the measuring mode by using the new coefficient ‘c’ for calculating flow.