

DBL-A Differential pressure transmitter, 4-20 mA

General description

The differential pressure transmitters series are used for measuring differential pressure, positive pressure and vacuum.

Applications

Monitoring gaseous, non-aggressive media. Possible areas of application are:

- air-conditioning and clean rooms
- building automation
- environmental protection
- fan and blower control
- valve and flap control
- filter and blower monitoring
- fluid and level monitoring
- control of air flows

Measuring method

Piezoresistive pressure transducer

Principle of operation

The pressure transducer converts the mechanical measured variable of pressure into an electrical measuring signal. The piezoresistive pressure transducer integrated in the differential pressure transmitter 984 is designed so that the pressure to be measured is applied to a thin membrane made of monosilicon. The membrane is deflected by this. The semiconductor resistors on the membrane detect this mechanical deflection and generate an electrical output signal. The arrangement of the resistors simultaneously compensates for the temperature response. The signal of the pressure transducer is converted into the output signal by high-gain operation amplifiers.

The electrical output signal changes within the specified error limits proportionally to the applied pressure.



Linearity range	Overload capacity	Bursting pressure
0 ... 100 Pa 1)	25 kPa	50 kPa
0 ... 250 Pa 1)	25 kPa	50 kPa
0 ... 500 Pa 1)	25 kPa	50 kPa
0 ... 1 kPa 2)	25 kPa	50 kPa
0 ... 2.5 kPa	30 kPa	75 kPa
0 ... 5 kPa	75 kPa	100 kPa
0 ... 10 kPa	100 kPa	200 kPa
0 ... 25 kPa	100 kPa	200 kPa
0 ... 50 kPa	100 kPa	200 kPa
0 ... 100 kPa	300 kPa	500 kPa
0 ... 250 kPa	1.2 MPa	2 MPa

Pressure medium	Air and non-aggressive gases
Linearity and hysteresis error	$\leq \pm 1\%$ of FS
Temperature error 0 .. 50 °C	$\leq \pm 1\%$ of FS 1) $\leq \pm 5\%$ v. FS 2) $\leq \pm 2.5\%$ v. FS
Storage temperature	-10 .. 70 °C
Long-term stability, typ.	$\leq \pm 0.5\%$ of FS / year
Repetition accuracy	$\leq \pm 0.2\%$ of FS
Position dependence	$\leq \pm 0.02\%$ of FS / g
Humidity	0 ... 95 % rel, non-condensing
Response time	10 ms
Supply voltage	18 ... 24 ... 30 VAC 16 ... 24 ... 32 VDC
Supply Current , max.	30 mA for AC 20 mA for DC
Output signal	4 ... 20 mA, short-circuit-proof
Offset adjustment	$\leq \pm 80\ \mu\text{A}$
Span adjustment	$\leq \pm 80\ \mu\text{A}$
Process connection	6 mm hose pipe
Electrical connection	Screw terminal block for wire up to 1.5 mm ²
Mounting	Screw mounting with serrated screws
Special features	none
Housing material	Housing with process connection P2 made of ABS, light gray; mounting part with process connection P1 made of POM, white
Housing dimensions	approx. \varnothing 85 x 58 mm
Weight	approx. 130 g
Protection category to DIN 40050	IP 00 without protection cap IP 54 with protection cap
Standards / Conformance	IEC 770, EN50081-2, EN50082-2

Installation position

The position error is eliminated by the self-compensating piezo measuring cell. The installation position is arbitrary.

Start-up

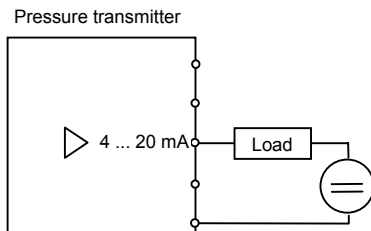
The differential pressure transmitter 984 can only be operated with 24 VDC.

Firstly the pressure is applied to the required port with a hose (interior diameter 6 mm). The pressure at P1 must basically be higher than at P2 to obtain a correct 4 ... 20 mA signal.

The output signal is then connected to the *Out 4 ... 20 mA* terminal.

In the final step the supply voltage is connected to the terminal labeled with *In 24 VDC*.

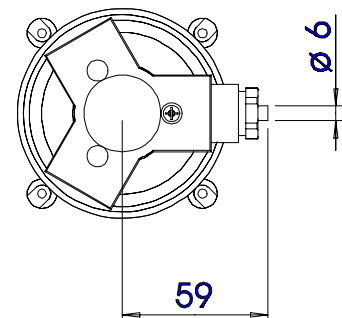
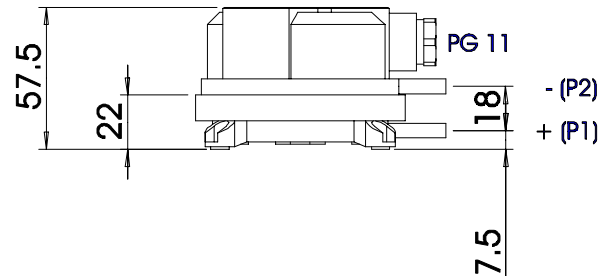
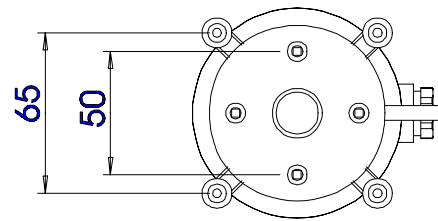
Connection



Connection assignment

	nc
	nc
	Out 4 ... 20 mA
	nc
	In 18...24...30 VDC

Dimensional drawing



Product liability

The product described in this data sheet may be installed and started up only by experts. The applicable safety regulations must be complied with without fail.

According to these regulations installations must be disconnected from the power supply and secured against unintentional switching back on.

No liability is accepted for damage arising due to incorrect use.