Differential pressure sensor DS 85

Low-pressure sensor with analog output
Digital display or switching output

- Membrane measuring instrument with differential transformer
- smallest measuring range 0...50 Pa
- Analog output 0...10 V in three-wire configuration or 4...20 mA in two-wire configuration
- LCD digital display, 3 digits as an option
- Switching output (open collector) as an option
- Supply voltage 24 Vac or 24 Vdc, for two-wire technology 12...30 Vdc

Description and operation

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Safety instructions

Caution! Read these instructions carefully before connecting and operating the device.

Specialist personnel will connect and commission the system.

Application

The DS 85 differential pressure sensor is used to measure small differential pressures of non-aggressive gases, especially air.

The application area includes, for example, air conditioning technology for controlling fans, monitoring room pressure or controlling filters.

Description

The differential pressure to be measured acts on a silicone diaphragm and deflects it against a measuring spring. A differential transformer with SMD-mounted electronics converts this deflection into an electrical output signal.

A 3-digit LCD digital display is available as an option. In ± measuring ranges, the negative value is indicated by a red LED.

In addition to the analog output signal, the DS 85GS version has an open-collector switching output that can drive external switching relays with currents of max. 50 mA.
The switching delay and hysteresis can be adjusted using two potentiometers on the front. The switching state (relay activated) is indicated by an LED.

Assembly

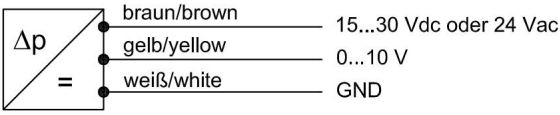
The differential pressure sensors are designed for wall mounting. They should be mounted vertically.

The pressure lines are connected using a plastic hose with an inner diameter of 4mm.

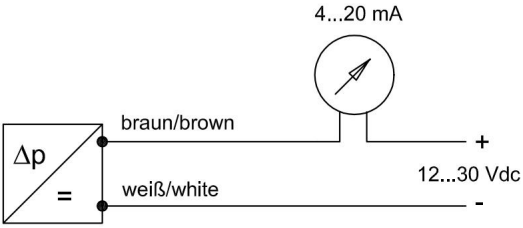
A 50 cm long color-coded cable is provided for the electrical connection.

electrical connection

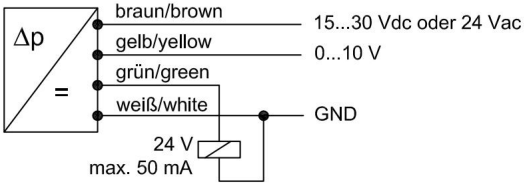
The differential pressure sensors are electrically connected via a two-, three- or four-core 50 cm long color-coded cable.



Connection diagram DS 85

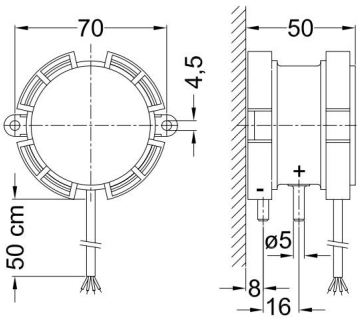


Connection diagram DS 85Z two-wire technology, 4...20 mA. The connection polarity at the sensor is arbitrary.



Connection diagram DS 85 with Border contact

Construction dimensions



Switch output settings

Time delay
Left stop: 0 s
Right-wing attack: 7s

Hysteresis setting
Leftward swing: 0.25%
Right-wing attack: 5%

Settings
Switching output

Technical data

Measuring ranges:	0.....50 Pa (0...0.5 mbar), 0.....100 Pa (0.....1 mbar) 0.....200 Pa (0.....2 mbar), 0.....500 Pa (0.....5 mbar) 0...1000 Pa (0...10 mbar), 0...2000 Pa (0...20 mbar) 0...4000 Pa (0...40 mbar), 0...6000 Pa (0...60 mbar)
Overload protection:	at least up to 10 times the measuring range, from 2 mbar 100 times (0.2 bar)
static pressure:	max. 0.2 bar
Pressure connections:	Hose nozzles 5mm ø
electrical connection:	3 or 4-core cable, 50 cm long, color-coded, Electronics protected against reverse polarity
Housing:	Ultramid, glass fiber reinforced, black Diameter 70 mm, depth 50 mm
Protection class:	IP65 according to EN 60529
Supply voltage:	24 Vac (15...30 V) or 24 Vdc ± 15%
Power consumption:	approx. 12 mA
Ambient temperature:	0...50 °C
Usage position:	perpendicular, position dependency when rotated by 90° approx. 0.25 mbar
Weight:	approx. 90 g
EMC:	Tested according to EN 50081-2, 50082-2, CE marking
Exit:	0...10 V, max. load 5 mA, three-wire connection 4...20 mA, two-wire technology, supply voltage 12...30 Vdc, polarity arbitrary
Display: (Option)	3-digit LCD digital display, digit height 9 mm, Display in pressure units

Switching output: (Option) open collector, 24 V, max. 50 mA
Setpoint adjustment potentiometer with scale 0...100%
Hysteresis adjustable from 0.25% to 5%
Adjustable time delay: 0...7 s
The switching function (min. or max.) is fixed upon delivery.

Error limits	
Zero point deviation:	± 0.75%
Sum of linearity and hysteresis For measuring ranges of 50 Pa and 100	± 1%
Pa: for measuring ranges from 200 Pa:	± 0.5%
Temperature drift at zero point:	± 0.3% / 10 K
Temperature drift measuring range:	± 0.2% / 10 K