



Installation and operation manual

DS85P – DIFFERENTIAL PRESSURE SENSOR

Low pressure sensor with analogue
output and selectable measuring ranges



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1. General safety instructions

1.1 Signal words for safety instructions

The safety instructions in this operating manual are intended to avert danger. They are contained in the operating instructions before any action / work / activity is described which could result in a hazard.

CAUTION	Identification of a low-risk hazard that may result in property damage or minor injury.
NOTICE	Signal word for an important information about the product, which should be drawn special attention to.
Hazard word 	Type of hazard Hazard source Hazard prevention

1.2 Pictograms and symbols used

The following characters are used in this manual:

	General danger symbol (danger, warning, caution)		General information
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1.3 General notes

NOTICE 	These operating instructions contain instructions for the correct installation and operation of the differential pressure regulator and are intended exclusively for the operator and authorised specialist personnel. Observing the operating instructions helps to avoid dangers and downtimes.
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2. Product description

The differential pressure sensor DS85P is used to measure small differential pressures of non-aggressive gases, especially air.

2.1 Intended use

The area of application is, for example, air conditioning technology, room pressure monitoring or filter control. A signal of 0...10 V DC is available to the user as an analogue output. The area of application is, for example, in air-conditioning technology for the control of fans, room pressure monitoring or filter control.

2.2 Functional description

A soft silicone diaphragm with a corresponding measuring spring is used as the sensor, which is fine-tuned to each measuring range. The deflection of the diaphragm is measured contactless with a differential transformer and converted into a standardized output signal by the electronics. The ranges from 0...50 Pa to 0...6000 Pa are covered by three measuring range groups, and in each device group four calibrated measuring ranges can be selected via a 2-pole DIP switch.

3. Montage

The differential pressure sensor DS85P is designed for wall mounting. Please consider the following factors when selecting the location:

- The mounting surface must be sufficiently firm and vibration-free.
- The environment must comply with the climatic conditions specified in the technical data.

VORSICHT

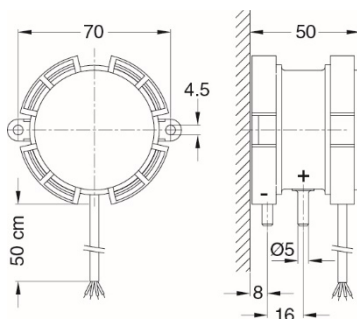


Material damage

Read the operating instructions carefully before installation and use. The device may only be connected and used by experienced specialist personnel.

3.1 Dimension

All specifications in mm.



3.2 Wall mounting

1. Hold the DS85P against the wall, mark the mounting holes.
2. Drill fixing holes for sufficiently dimensioned screws or dowels.
3. Press in the dowels.
4. Insert the fixing screws through the screw channels of the housing screws so that the screws protrude from the rear of the housing.
5. Place the housing with the screws exactly on the fixing holes with the dowels.
6. Tighten the screws.

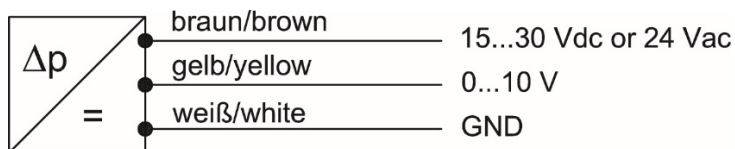
4. Start-up

4.1 Pressure connections

Connect all pressure connections properly with plastic hoses (inner diameter 5mm).

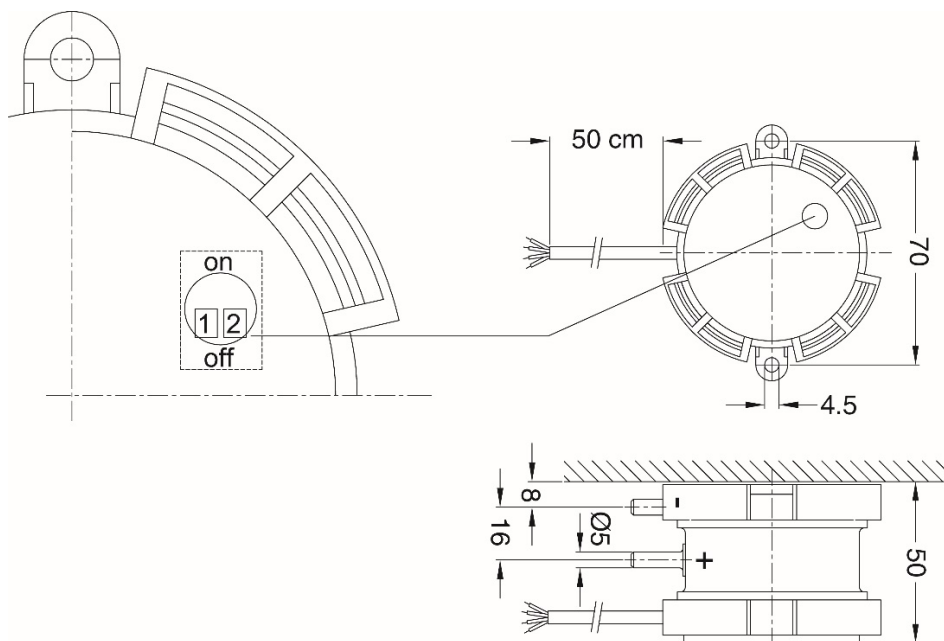
4.2 Electrical connection

The differential pressure sensors are electrically connected via a three wire 50 cm long colour-coded cable.



5. Measuring range selection

Four measuring ranges can be selected via a 2-pole DIP switch under the rubber plug in the front cover.



Device type		DS85P 200		DE85P 1000	DS85P 6000
Measuring range	DIP-switch 1 2				
MB1:	off off	0...200 Pa	0...1000 Pa	0...6000 Pa	
MB2:	on off	0...150 Pa	0...500 Pa	0...4000 Pa	
MB3:	off on	0...100 Pa	0...300 Pa	0...3000 Pa	
MB4:	on on	0...50 Pa	0...200 Pa	0...2000 Pa	

6. Error limits

	Zero deviation	Final value deviation	Linearity deviation	Resolution	hysteresis
DS85P-200					
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 %
DE85P-1000					
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 %
DS85P-6000					
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 (related to the respective highest measuring span)

Zero point: ± 0.2 % / K

End value: ± 0.3 % / K

7. Maintenance

The DS85P contains no wearing parts or consumables. Maintenance is not necessary. Upon request, Arthur Grillo GmbH offers an annual calibration with works certificate. Information on this can be obtained from:



Arthur Grillo GmbH
 Am Sandbach 7
 40878 Ratingen

Phone: 0 21 02 - 47 10 22
 Fax: 0 21 02 - 47 58 82
 E-Mail: info@grillo-messgeraete.de

8. Warranty

Warranty and liability claim for personal property damage are excluded if they are attributable to one or more of the following causes:

- Unapproved use of the device.
- Improper installation, start-up, operation and maintenance of the device.
- Unauthorized structural changes to the device beyond the intended purpose.
- Improperly carried out repairs.
- Disasters caused by foreign bodies and force majeure.

9. Disposal

When disposing of electronic components and devices, observe the legal regulations in the country of use.

10. Technical specifications

	PERFORMANCE:
Overload safety:	0,2 bar
Static pressure:	Max. 0,2 bar
Zero-point calibration:	Adjustable via REED contact, no cyclic zero-point calibration required
Reaction time:	Immediately
	ACCURACY / ERROR LIMITS:
Zero offset:	See chapter 6. error limits
Sum of linearity and hysteresis:	See chapter 6. error limits
Temperature drift measuring span:	Due to 4 measuring ranges in 3 measuring groups
	TECHNICAL SPECIFICATIONS:
Operating mode:	measurement mode
Medium:	Air or non-aggressive gases
Measuring sensor:	Electromechanical diaphragm movement
Measurement unit:	Pa
Smallest measuring span:	0...50 Pa (0,5 mbar)
Largest measuring span:	0...6000 Pa (60 mbar)
Measuring ranges:	0...50 Pa (0,5 mbar), 0...200 Pa (2 mbar), 0...500 Pa (5 mbar), 0...1000 Pa (10 mbar), 0...2000 Pa (20 mbar), 0...4000 Pa (40 mbar), 0...6000 Pa (60 mbar)
Measuring range selection:	Yes via 2-pole DIP switches
Characteristic:	Linear
Ambient temperature:	-10...+50 °C
Storage temperature:	-25...+60 °C
	PHYSICAL:
Case:	Ultramid
Dimensions:	ø 70 mm, depth 50 mm
Weight:	approx. 90 g
Protection class:	IP 54 according EN 60529

Electrical connections:	3-core cable, color-coded, electronics protected against reverse polarity
Pressure connections:	hose nozzles 4 mm Ø
Operating position:	Vertical, position dependence for 90° rotation approx. 25 Pa
ELEKTRONIK:	
Supply voltage:	15...30 Vdc; 24 Vac (+/-15%)
Current consumption	Approx. 10 mA @ 24 Vdc
Output:	0...10 V; three-wire circuit
CONFORMITY:	
EMC:	EN 61000-6-2, EN 61000-6-3, CE-signs
RoHS:	According RoHS guideline 2011/65/EU

10.1 CE- label

As electrical equipment, the DS85P falls within the scope of the 2004/108/EC directive (EMC directive). The following standards have been applied within the scope of the EMC directive:

DIN EN 61000-6-2:2006-03 corrigendum 1:2011-06	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
DIN EN 61000-6-3:2011-09	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission for residential, commercial and light-industrial environments

You can request the declaration of conformity here:



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