

DPS 100

Gauge- / Differential- / Absolute Pressure Transmitter



- ▶ for very low pressure starting at 0.1 mbar
- ▶ inductive pressure sensor
- ▶ for use in industry and laboratory
- ▶ differential pressure ranges from 0 ... 0.1 mbar up to 0 ... 1000 mbar

The pressure transmitter DPS 100 is suited for measurement of gauge pressure, vacuum, and differential pressure of non-aggressive gases.

Basic element of the DPS 100 is a wearless inductive pressure sensor, that ensures almost no maintenance. The DPS 100 can be supplied alternatively with 24 V_{DC} (reverse polarity protection) or 230 V_{AC} (optional 110 V_{AC}, 24 V_{AC}).

In addition to the different output signals (current or voltage) the customer has the possibility to allow for up to 2 limit contacts. Optional can be integrated a LC display for representing the pressure value. Additional the DSP 100 is available for the customer with an accuracy of 0.2 % FSO.

Preferred areas of use are:

- ▶ heating and air conditioning
- ▶ clean room technology
- ▶ medical equipment
- ▶ filter technology, flow measurement
- ▶ level measurement (via air column)
- ▶ flow velocity measurement
- ▶ pitot tube, orifice plate

- ▶ versions for gauge, differential, and absolute pressure
- ▶ high overpressure; optional overpressure protection 2 bar
- ▶ excellent long term stability
- ▶ high electrical operational reliability (reverse polarity and short-circuit protection)
- ▶ short reaction time
- ▶ long operating life
- ▶ option: LC display
- ▶ option: limit contacts
- ▶ option: automatic zero adjustment

Characteristics



DPS 100
 Differential Pressure Transmitter

Input pressure range												
Nominal pressure P _N [mbar] (gauge, vacuum, diff. pressure)	0.1 ¹	0.5	0.6	1	1.6	2.5	4	5	6	10	16	
	20	25	50	100	160	200	250	400	500	600	1000	
Option P _N absolute ² [mbar]	900 .. 1100			800 ... 1200				0 ... 1000				
Permissible overpressure	< 400 mbar: 5 x				≥ 400 mbar: 2 x ³				Δp measurement: p _{max} = 1 bar			

Output signal / Supply	
Standard	3-wire: 0 ... 10 V / V _S = 19 ... 31 V _{DC}
Optional	2-wire: 4 ... 20 mA / V _S = 12 ... 31 V _{DC}
	3-wire: 0 ... 20 mA / V _S = 19 ... 31 V _{DC}
	3-wire: 4 ... 20 mA / V _S = 19 ... 31 V _{DC}
	4-wire: 0 ... 20 mA
	4-wire: 4 ... 20 mA
	0 ... 10 V
Supply options	4-wire: 230 V _{AC} / 110 V _{AC} / 24 V _{AC} (± 10 % tolerance)

Performance			
Non-linearity	standard:	IEC 60770	BFSL
	optionally : P _N ≥ 1 mbar:	≤ ± 1 % FSO	≤ ± 0.50 % FSO
	P _N ≥ 4 mbar:	≤ ± 0.5 % FSO	≤ ± 0.25 % FSO
		≤ ± 0.2 % FSO	≤ ± 0.10 % FSO
Hysteresis	≤ ± 0.1 % FSO		
Permissible load	voltage 3-/ 4-wire:	R _{min} = 2 kΩ	
	current 3-/ 4-wire:	R _{max} = 500 Ω	
	current 2-wire:	R _{max} = [(V _S - V _{Smin}) / 0.02] Ω	
Influence effects	supply:	≤ ± 0.5 % FSO	
Long term stability	≤ ± 0.5 % FSO / year		
Reaction time	T ₉₀ approx. 0.02 s		

Thermal effects	
Thermal error for offset and span in compensated range	≤ ± 0.3 % FSO / 10 K
	10 ... 50 °C

Electrical protection	
Reverse polarity protection (DC power supply)	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Permissible temperatures	
Specified range	10 ... 50 °C
Storage	-10 ... 70 °C

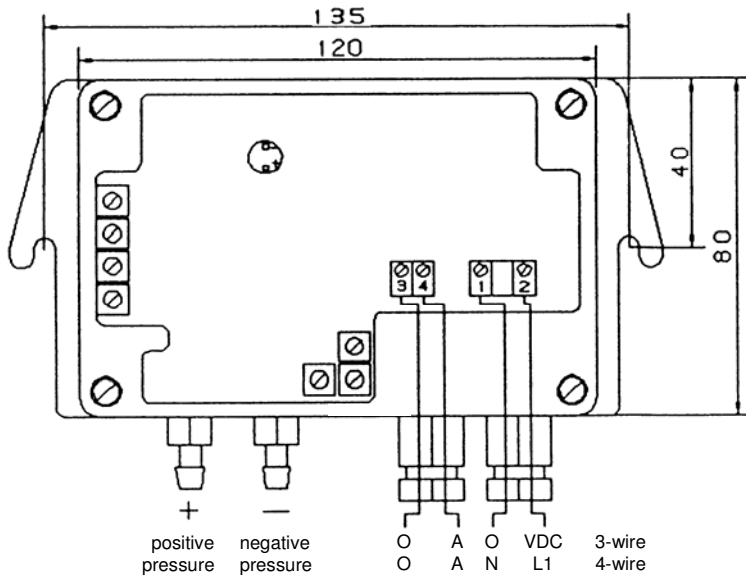
¹ transmitters with pressure range 0.1 mbar are equipped with „automatic zero adjustment“ and „overpressure protection 2 bar“ as a standard

² only possible with accuracy 1 % FSO

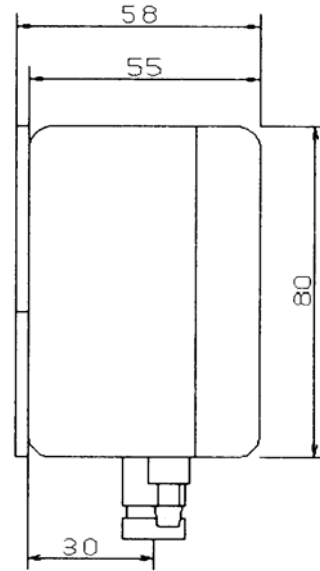
³ higher overpressure possible on request

Dimensions in mm (standard version)

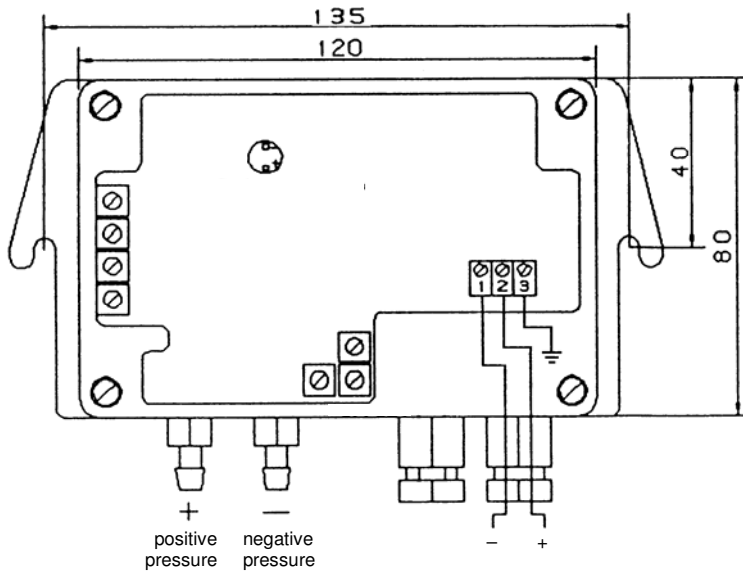
3-/ 4-wire



Side view



2-wire



Electrical connection

Standard	screw terminals max. 1.5 mm ² cable gland M12x1
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Mechanical connection

Standard	Ø6.6 x 11 (for flex. tubes Ø6)
Option	Clamp ring tube fitting 1/8" Ms

Materials

Housing	ABS
Media wetted parts	Ni, Al, CuBe, PU, silicon rubber

Pressure sensor

Media	non-aggressive gases
Principle of measurement	inductive
Sensor volume	approx. 3 ml
Volume increase	approx. 0.2 ml at nominal pressure

Miscellaneous

Current consumption (without contacts)	signal output voltage: approx. 10 mA
Dimensions	depends on product version; standard: 120 x 80 x 55; max. 122 x 120 x 105 (L x W x H)
Weight	approx. 300 g / approx. 400 g with power supply unit
Installation position	any
Ingress protection	IP 54

Options

Display	LCD 3 1/2-digits
Zero adjustment	automatic zero adjustment (housing 122 x 120 x 75)
Limit contacts	1 or 2 limit contacts relay output with two-way contacts: 6 A / 230 V _{AC}
Square-root extraction output signal ⁴	for output signals 0 ... 10 V or 0(4) ... 20 mA $U_R = \sqrt{10 \times U_L}$ (U_L = linear output 0 ... 10 V) $I_R = \sqrt{20 \times I_L}$ (I_L = linear output 0 ... 20 mA)
Overpressure capability	10 x (max. 2 bar)
Overpressure protection	2 bar (one sided)

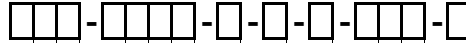
Pin configuration

Electrical connection		terminals	
2-wire-system (DC supply 12 .. 31 V _{DC})	Supply +		2
	Supply -		1
	Ground		3
3-wire-system (DC supply 19 ... 31 V _{DC})	Supply +		2
	Supply -		1
	Signal +	} internally connected	4
	Signal -		3
3-wire-system (AC supply 230, 110 or 24 V _{AC})	Supply L1		2
	Supply N		1
	Signal +		4
	Signal -		3

⁴ non-linearity is 1 % FSO

Ordering code DPS 100

DPS 100



Pressure										
differential pressure	2	0	0							
absolute pressure ¹	2	0	1							
Input [mbar]										
for differential pressure										
0,1 ^{2,3}	K	1	0	0						
0,5 0,6 ³	K	5	0	0						
1,0 1,6 2,5	0	0	1	0						
4 5 6	0	0	4	0						
10 16 20 25 50	0	1	0	0						
100 160 200 250 400 500 600	1	0	0	0						
1000	1	0	0	1						
for absolute pressure										
900 ... 1100	B	1	0	0						
800 ... 1200	B	2	0	0						
0 ... 1000	1	0	0	1						
customer	9	9	9	9						on request
Supply										
12 ... 31 V _{DC} / 2-wire					1					
19 ... 31 V _{DC} / 3-wire					2					
230 V _{AC} / 4-wire					3					
110 V _{AC} / 4-wire					4					
24 V _{AC} / 4-wire					5					
Output										
4 ... 20 mA / 2-wire					1					
0 ... 20 mA / 3- or 4-wire					2					
0 ... 10 V / 3- or 4-wire					3					
4 ... 20 mA / 3- or 4-wire					7					
customer					9					on request
Accuracy										
standard						8				
option for P _N ≥ 1 mbar						5				
option for P _N ≥ 4 mbar						B				
customer						9				on request
Mechanical connection										
∅6,6 x 11 (for flex. tubes ∅6)							Y	0	0	
clamp ring tube fitting 1/8" Ms							Z	1	0	
Options										
display: LCD 3 1/2-digits										1
automatic zero adjustment ²										3
contacts: 1 relais ³										4
2 relais ³										5
square root extracted output ^{3,4}										6
overpressure protection 2 bar (1side)										7
overpressure 10 times (max. 2 bar)										8
Time constant										Z
customer										9
										on request

¹ only possible with accuracy 1 % FSO

² at transmitters with measure range 0,1 mbar is standard „automatically zero adjustment“ and „overpressure protection 2 bar“

³ only possible with 3-wire-version

⁴ non-linearity is 1 % FSO