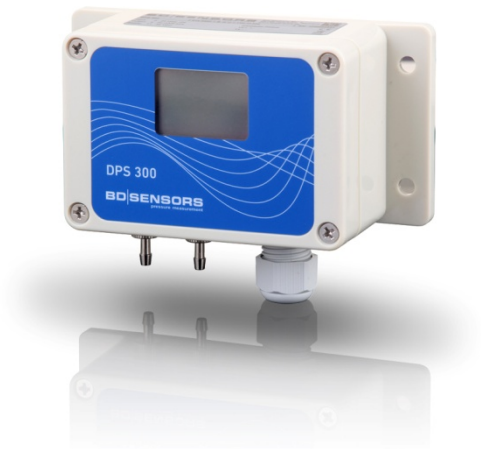
DPS 300

Multi Range Differential Pressure Transmitter for Gas and Compressed Air

Silicon Sensor

accuracy according to IEC 61298-2:
1 % FSO



Differential pressure

from 0 ... 1.6 mbar up to 0 ... 1000 mbar

Output signals

3-wire: 0 ... 10 V, 0 ... 20 mA
(0 ... 5 V, 4 ... 20 mA switchable)

2-wire: 4 ... 20 mA (optional)

Special characteristics

- adjustable ranges
- high overpressure capability
- adjustable damping
- compact form

Optional versions

- LC-display, two-line
- automatic zero adjustment
- contacts
  (only in combination with display)
- square root extraction
  (only in combination with display)

The pressure transmitter DPS 300 was developed for the differential pressure measuring for dry, non aggressive gases and compressed air and can be used for several HVAC applications

The DPS 300 is a multi range transmitter with up to three adjustable ranges.

The device is equipped with a two-line LC display optionally and can be parameterized simply. Values, status of the contact and the unit are shown on the display.

Preferred applications are

HVAC applications
e.g. air conditioning, clean room technology, filter monitoring

Medical

Preferred areas of use are

Gas, compressed air

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Input pressure range						
Nominal pressure p_N [mbar] (differential, gauge pressure)	1.6	4	10	40	250	1000
Adjustable to [mbar]	1.0	2.5	6	25	60 / 160	400 / 600
Nominal pressure p_N symmetric [1] (differential pressure) [mbar]	± 1.6	± 4	± 10	± 40	± 250	± 1000
Max. static pressure [mbar]	200	200	200	345	1000	3000
[1] not possible with square root extraction						

Output signal / Supply			
Standard	3-wire:	0 ... 10 V / 0 ... 20 mA	V_S = 19 ... 32 V_{DC}
	switchable on:	0 … 5 V / 4 … 20 mA	
		with automatic zero adjustment:	V_S = 24 ... 32 V_{DC}
Option	2-wire:	4 ... 20 mA	V_S = 11 ... 32 V_{DC}
		with automatic zero adjustment:	V_S = 24 ... 32 V_{DC}

Performance		
Accuracy [2]	for $p_N \geq 6$ mbar: ≤ ± 1 % FSO for $p_N < 6$ mbar: ≤ ± 2 % FSO	
Permissible load	voltage 3-wire: R_{min} = 10 kΩ	current 3-wire: 330 Ω
	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0{,}02\ A]\ \Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Response time T_{90}	< 100 msec; adjustable by potentiometer in the range of 0 msec up to 5000 msec	
Turn on time	500 msec	
Long term stability	for $p_N < 6$ mbar: ≤ ± 0.5% FSO / year at reference conditions for $p_N \geq 6$ mbar: ≤ ± 0.2% FSO / year at reference conditions	
Measuring rate	12.5 Hz	
[2] accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)		

Contact (optional)		
	3-wire version	**2-wire version**
Number, form	2 x relay-output (NO/NC)	2 x PNP-open-collector-contact
Switching current Switching voltage Switching capacity	max. 1 A max. 60 V_{DC}; max. 40 V_{AC} max. 60 W	max. 125 mA resistant; short-circuit-proof
Accuracy of switching points	≤ ± 2 % FSO	≤ ± 2 % FSO
Accuracy of repeatability	≤ ± 0.5 % FSO	≤ ± 0.5 % FSO
Switching frequency	5 Hz	5 Hz
Switching cycles	< 100 x 10^6	< 100 x 10^6

Thermal effects (offset and span)	
Thermal error	for $p_N < 6$ mbar: ≤ ± 0.5 % FSO / 10 K (typ.) for $p_N \geq 6$ mbar: ≤ ± 0.3 % FSO / 10 K (typ.)
In compensated range	0 ... 50 °C

Permissible temperatures	
Medium	0 … 50°C
Electronics / environment	0 … 50°C
Storage	-10 … 70°C

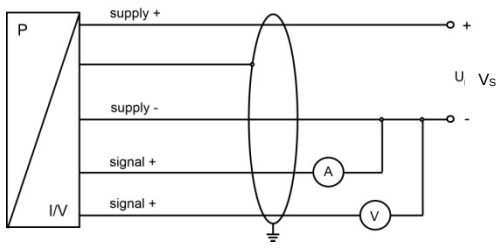
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic protection	EMC directive: 2014/30/EU emission and immunity according to EN 61326

Materials	
Pressure port	brass nickel plated
Housing	ABS
Sensor	ceramic, silicon, epoxy, RTV
Media wetted parts	pressure port, PVC / silicone tube, sensor

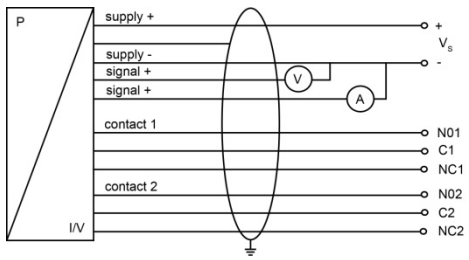
Display (optional)		
Performance	two-line LC-Display, visible range 32.5 x 22.5 mm 5-digit 7-segment-main display, digit size 8 mm, range of indication: ±9999 8-digit 14-segment-additional display, digit size 5 mm 52-segment-bargraph accuracy: 0.1% ±1 digit	
Functions	- parameterisation of contacts - selection of units - selection of signal (linear, square root extraction) - cut-off-function (only with square root extraction) - min- / max-value - recalibration - autozeroing - factory setting	
Miscellaneous		
Current consumption	2-wire: max. 22 mA 3-wire: max. 30 mA (during automatic zero adjustment: +23 mA)	
Weight	approx. 200 g	
Ingress protection	IP 54	
Installation position	vertical [3]	
Operational life	100 million load cycles	
[3] The devices are calibrated in a vertical position with pressure port down. If this position is changed on installation there can be slight deviations in the zero point.		
Mechanical connections (dimensions in mm)		
Standard	Ø 6.6 x 11 (for flex. tubes Ø 6)	
Option	Ø 4.4 x 10 (for flex. tubes Ø 4)	
Electrical connections (conductor cross-section)		
Without ferrule	1.5 mm²	
With ferrule	1 mm²	
Pin configuration		
Standard	cable gland M16x1.5	
Electrical connections	3-wire	2-wire
supply + supply – signal + (only for 3-wire) contact 1 contact 2	VS + VS - Iout / Vout C1 / NO1 / NC1 C2 / NO2 / NC2	VS + VS - - S1 S2

Wiring diagrams

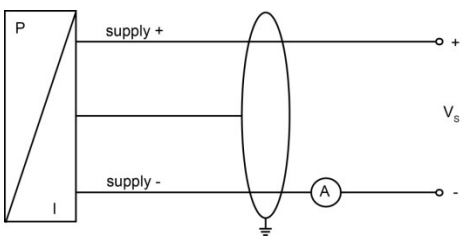
3-wire-system (current / voltage)



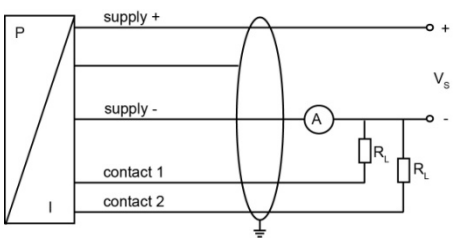
3-wire-system (current / voltage) with 2 contacts



2-wire-system (current)

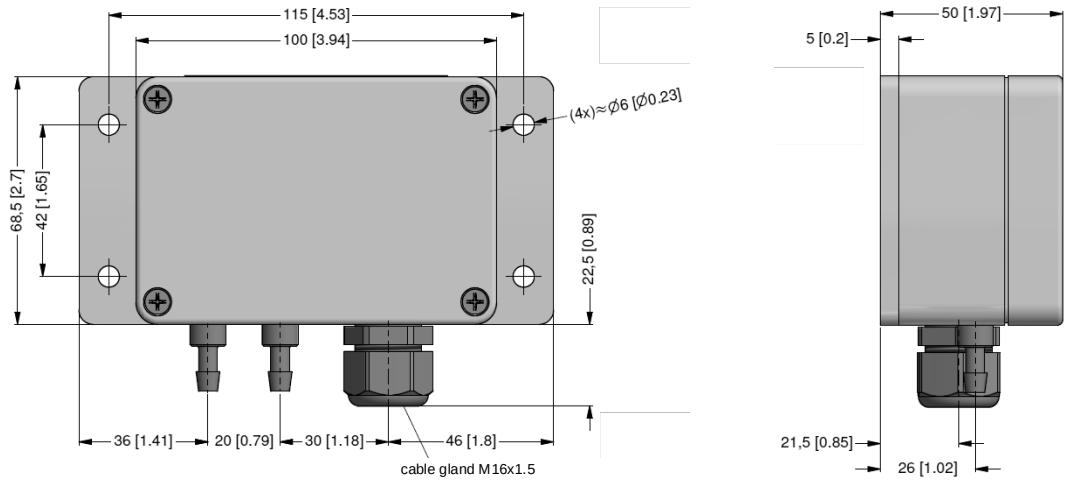


2-wire-system (current) with 2 contacts

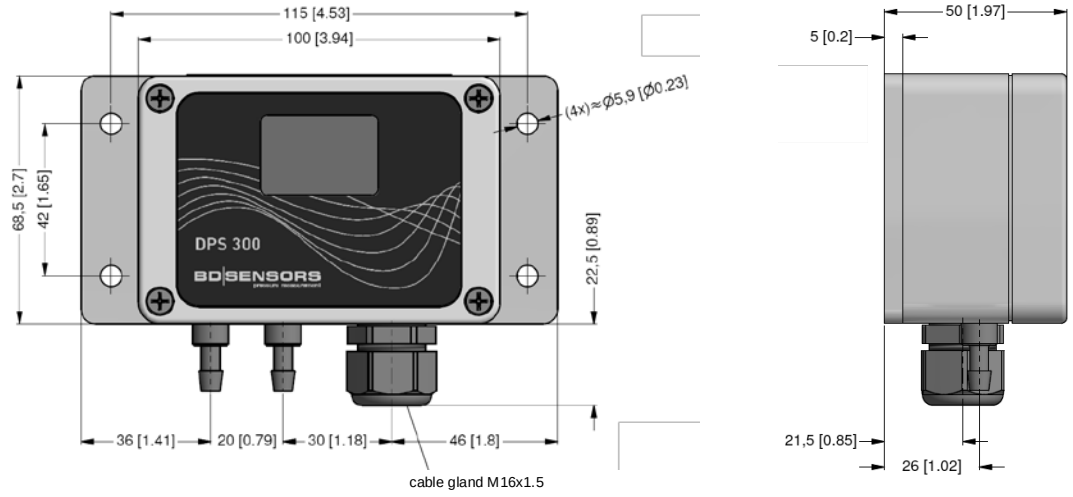


Dimensions (mm / in)

without display



with display



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BD|SENSORS pressure measurement

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Ordering code DPS 300

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Pressure																									
differential pressure		8	1	5																					
gauge pressure		8	1	6																					consult
Input	**[mbar]**																								
1.6					0	0	1	6																	
4.0					0	0	4	0																	
10					0	1	0	0																	
40					0	4	0	0																	
250					2	5	0	0																	
1000					1	0	0	1																	
-1.6 … 1.6					S	1	K	6																	
-4 … 4					S	0	0	4																	
-10 … 10					S	0	1	0																	
-40 … 40					S	0	4	0																	
-250 … 250					S	2	5	0																	
-1000 … 1000					S	1	0	2																	
customer					9	9	9	9																	consult
Output																									
3-wire: 0 … 10 V, 0 … 20 mA [1]									3Z																
2-wire: 4 … 20 mA									1																
customer									9																consult
contact																									
without										0															
2 contacts [2]										B															
Accuracy																									
$p_N \geq$ 6 mbar	1 % FSO										8														
$p_N <$ 6 mbar	2 % FSO										G														
Display																									
without display												0													
LC display												C													
customer												9													consult
Front foil																									
BD SENSORS													1												
neutral													N												
customer													9												consult
Mechanical connection																									
Ø6.6 x 11 (for flex. tubes Ø6)														Y	0	0									
Ø4.4 x 10 (for flex. tubes Ø4)														Y	0	2									
														9	9	9									consult
Pressure port																									
brass nickel plated																	M								
customer																	9								consult
Special version																									
standard																		0	0	0					
automatic zeroing																		6	0	0					
square-root extraction [2]																		6	0	5					
customer																		9	9	9					consult

[1] output switchable on 0 … 5 V / 4 … 20 mA

[2] only in combination with display and not possible with symmetric nominal pressure

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