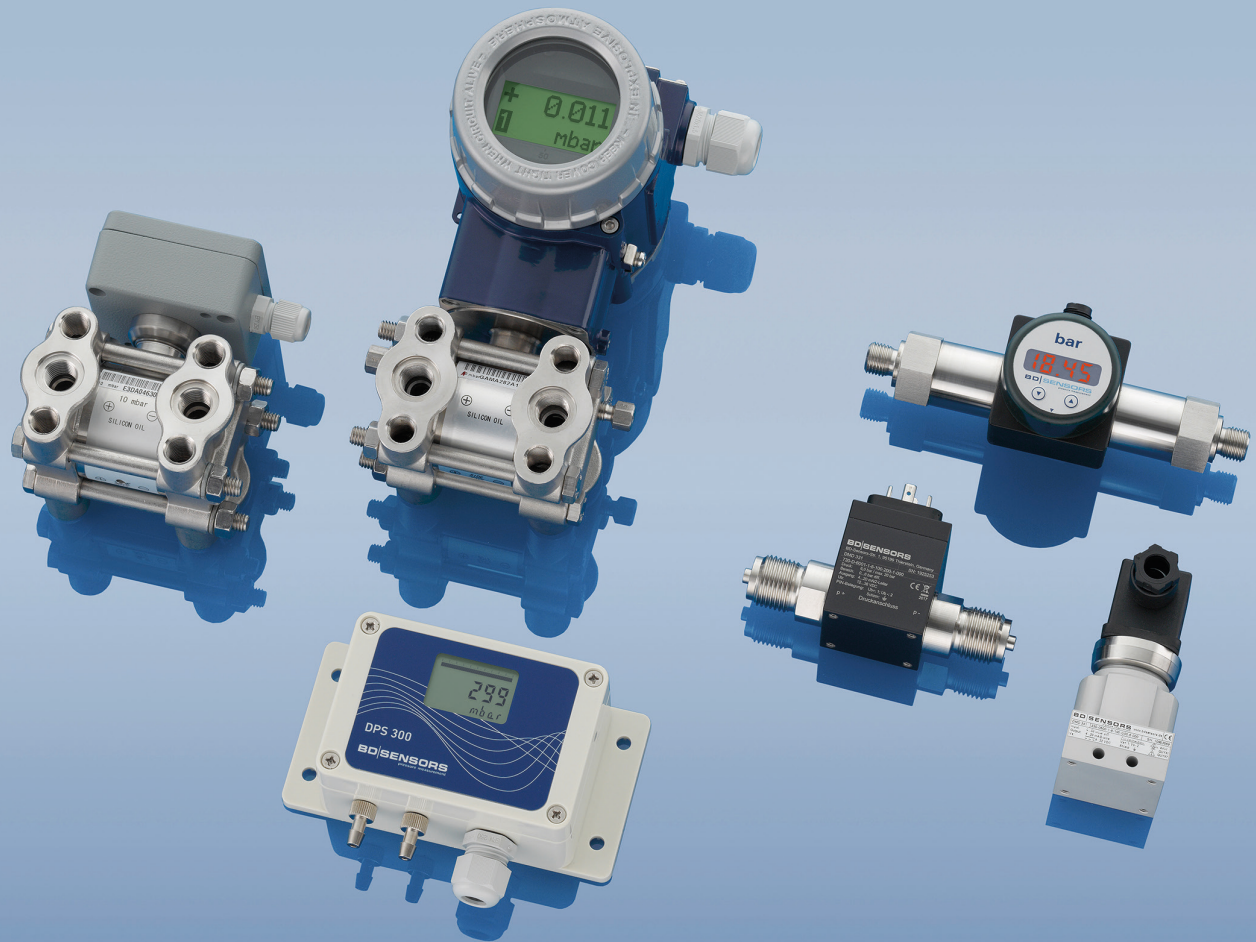


DIFFERENTIAL PRESSURE TRANSMITTER

PRODUCT CATALOGUE



PRESSURE at the highest LEVEL.

BD|SENSORS
pressure measurement

>> www.bdsensors.de



PRESSURE AT THE HIGHEST LEVEL

"Successful medium-sized companies are not successful because they are active in many areas, but rather because they concentrate on one area and do it better than anyone else."

This is our philosophy. That's why BD|SENSORS has concentrated on electronic pressure measurement technology from the beginning.

With our unrelenting product and quality strategy we have been successful in becoming a major player on the world market for electronic pressure sensing devices within a few years.

With 300 employees at 3 locations in Germany, the Czech Republic and China BD|SENSORS has solutions from 0.1 mbar up to 6.000 bar:

- > pressure sensors, pressure transducers
pressure transmitters
- > electronic pressure switches
- > pressure measuring devices with display and
switching outputs
- > hydrostatic level probes

Two pressure transmitters and a submersible probe, based on a stainless steel silicon sensor were the beginning. Today the range extends to more than 100 standard products, from economical OEM devices to high-end products with HART® communication or field bus interface.

In addition we have developed hundreds of customer-specific applications, underlining the competence and flexibility of BD|SENSORS. The excellent price/performance ratio of our products is proof of the fact that we are able to meet the toughest demand: Being a problem-solver for our customers.

For large production batches as well as for small production numbers, no matter for what medium or external factors, with almost any mechanical or electrical connection - we solve your problem

flexibly, quickly and cost-efficiently.

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DIFFERENTIAL PRESSURE TRANSMITTER

For differential pressure measurement

Pressure ranges: 0 ... 1 mbar up to 0 ... 70 bar

Thanks to different sensor technologies combined with compact aluminium die-cast cases or plastic housings, our differential pressure transmitters may be used for numerous fluids and gases, e. g. for monitoring ventilation ducts, filters and fans in HVAC areas as well as for level measurement in closed pressurized tanks.



	PRODUCT	PREFERRED APPLICATION			MEDIA WETTED PARTS				DIFFERENTIAL PRESSURE		ACCURACY	APPROVAL		
		process-industry	general purpose	HKL / HVAC	pressure port		sensor diaphragm		bar min	bar max	% FSO (standard)	EX	UL	HART
					metal	aluminium	silicon	stainless steel						
PRECISION	DPT 100		•		•			•	0.01	20	≤± 0.1			
	DPT 200	•			•			•	0.001	20	≤± 0.075	•		•
INDUSTRY	DMD 331		•		•			•	0.02	16	≤± 0.5	•		
	DMD 341		•	•	•	•	•		0.006	1	≤± 0.35		•	
	DMD 831		•		•			•	1	70	≤± 1.0 BFSL			
	DPS 200			•	•		•		0.006	1	≤± 1.0 BFSL		•	
	DPS 300			•	•		•		0.0016	1	≤± 0.5 BFSL			



DPT 100

Differential Pressure Transmitter for Process Industry

accuracy according to IEC 60770:
0.1 % FSO

Differential pressure

from 10 mbar up to 20 bar

Static pressure

max. 400 bar

Output signal

2-wire: 4 ... 20 mA

RS485 with Modbus RTU protocol

Special characteristics

- ▶ compact design
- ▶ fast response time
- ▶ aluminium die cast case
- ▶ zero adjustment via button

Optional versions

- ▶ several process connections

The differential pressure transmitter DPT 100 has been especially designed for fast test processes in leakage and flow measurement, where a fast response time and high sampling rate are necessary.

The compact design of the DPT 100 facilitates the usage in standardised applications. For instance, the installation in 19" racks.

The DPT 100 with optionally RS485 interface uses the communication protocol Modbus RTU which has found the way in industrial communication as an open protocol. The Modbus protocol is based on a master Slave architecture with which up to 247 Slaves can be questioned by a master – the data will transfer in binary form.

Preferred areas of use are

Test engineering / leak testing



Machine and plant engineering



Environmental technology

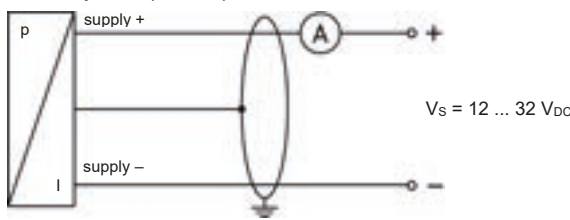
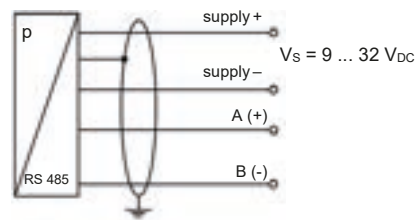

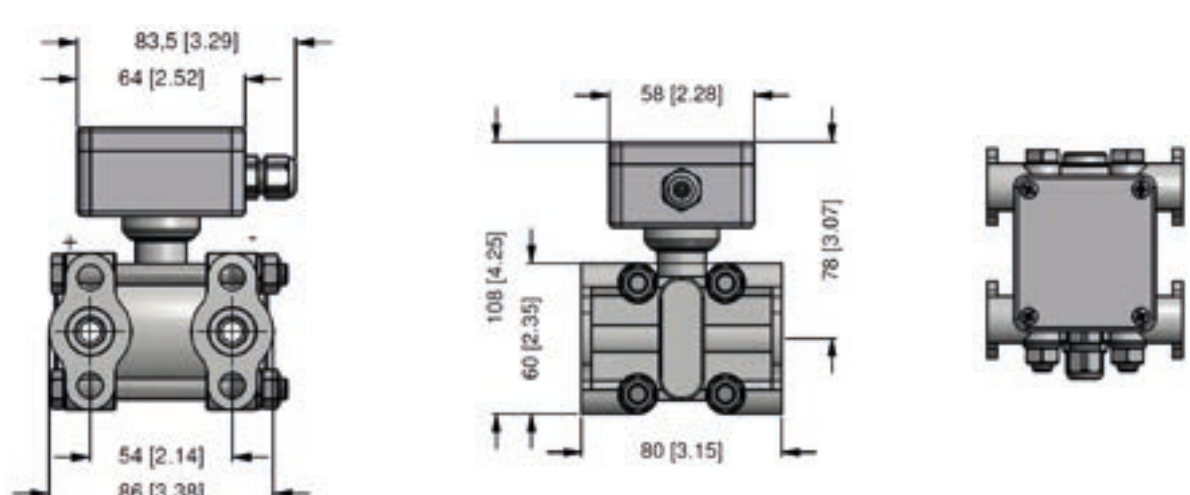


Energy production



Modbus®

Differential pressure ranges						
Pressure range p _N diff.	10 mbar	60 mbar	100 mbar	400 mbar	2.5 bar	20 bar
Pressure range p _N symmetric (diff.)	± 10 mbar	± 60 mbar	± 100 mbar	± 400 mbar	on request	on request
Permissible static pressure	70 bar	400 bar	400 bar	400 bar	400 bar	400 bar
Output signal / Supply						
Standard	2 wire : 4 ... 20 mA / V _S = 12 ... 32 V _{DC}					
Option	digital: RS 485 with Modbus RTU protocol / V _S = 9 ... 32 V _{DC} (delay time: 500 msec)					
Performance						
Accuracy ¹	p _N ≥ 60 mbar: ≤ ± 0.1 % FSO p _N < 60 mbar: ≤ ± 0.2 % FSO					
Permissible load	R _{max} = [(V _S – V _{S min}) / 0.02 A] Ω					
Influence supply	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ					
Influence static pressure p _N [Pa/100 bar]	10 mbar 18	60 mbar 30	400 mbar 40	2.5 bar 250	20 bar 2000	
Influence installation position	max. 400 Pa (can be compensated by zero-point correction) for ranges < 60 mbar please state installation position on the order					
Long term stability	p _N ≥ 60 mbar: ≤ ± 0.05 %FSO/ year at reference conditions p _N < 60 mbar: ≤ ± 0.15 %FSO/ year at reference conditions					
Sampling rate	250 Hz					
Turn-on time	approx. 260 msec					
Response time (10 ... 90 %)	10 msec					
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (offset and span)						
Thermal error	≤ ± 0.1 % FSO / 10 K					
Compensated range	-20 ... 80 °C					
Permissible temperatures						
Medium	-25 ... 85°C					
Electronics / environment	-25 ... 85°C					
Storage	-25 ... 85°C					
Electrical protection						
Short-circuit protection	permanent					
Reverse polarity protection	no damage, but also no function					
Electromagnetic compatibility	emission and immunity according to EN 61326					
Mechanical stability						
One-sided overload	according to the maximum static pressure of differential pressure sensor					
Vibration	5 g RMS (25 ... 2000 Hz)			according to DIN EN 60068-2-6		
Shock	100 g / 1 msec			according to DIN EN 60068-2-27		
Materials						
Pressure port / flange	stainless steel 1.4401 (316)				others on request	
Diaphragm	stainless steel 1.4404 (316L)				others on request	
Vent and dump valves, blanking plugs	stainless steel 1.4401 (316)					
Bolts and nuts	steel, zinc flake coated				others on request	
Housing	aluminium die cast with epoxy painting (grey)				others on request	
Cable gland	polyamide					
Seals (media wetted)	standard: FKM options: EPDM, NBR				others on request	
Filling fluids	silicone oil				others on request	
Media wetted parts	pressure port, seal of pressure port, diaphragm					

Miscellaneous		
Mounting bracket (optionally)	material C-steel or stainless steel 1.4401 (304) weight 0.45 kg (incl. bolts and nuts)	
Ingress protection	IP 66 / IP 67	
Installation position	any ²	
Weight	approx. 1800 g	
Current consumption	approx. 23 mA	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ³	
² Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point. Press the button for zero adjustment (see operating manual).		
³ This directive is only valid for devices with maximum permissible overpressure > 200 bar.		
Connections		
Electrical connection	terminal clamps in clamping chamber (for cable-Ø max.2.5 mm ²)	
Process connections		
Standard option	internal thread 1/4" - 18 NPT / fixing 7/16 UNF internal thread 1/4" - 18 NPT / fixing M10	
		others: on request
Wiring diagram		
2-wire-system (current)		RS485 / Modbus RTU
		
Pin configuration		
Electrical connection	terminal clamps	M12x1 / metal (4-pin)
Supply +	IN +	1
Supply -	IN -	3
for RS485 / Modbus RTU:		
A (+)	A	2
B (-)	B	4
Ground		plug housing
Dimensions (mm / in)		
		

Ordering code DPT 100

DPT 100					
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Pressure					
differential pressure	3	4	5		
Input					
10 mbar	0	1	0	0	
60 mbar	0	6	0	0	
100 mbar	1	0	0	0	
400 mbar	4	0	0	0	
2.5 bar	2	5	0	1	
20 bar	2	0	0	2	
-10 ... 10 mbar	S	0	1	0	
-60 ... 60 mbar	S	0	6	0	
-100 ... 100 mbar	S	1	0	0	
-400 ... 400 mbar	S	4	0	0	
customer	9	9	9	9	consult
Output					
4 ... 20 mA / 2-wire				1	
RS485 Modbus RTU				L5	
customer				9	consult
Accuracy					
pN ≥ 60 mbar:	0.1 % FSO			1	
pN < 60 mbar:	0.2 % FSO			B	
customer				9	consult
Housing					
aluminium				L	
customer				9	consult
Electrical connection					
terminals / cable gland M12x1.5				A K 2	
male plug M12x1 (4-pin) / metal				M 1 7	
customer				9 9 9	consult
Process connection					
1/4" - 18 NPT F / fixing 7/16 UNF				N 2 0	
1/4" - 18 NPT (F / vertical) / fixing 7/16 UNF				N 2 1	
1/4" - 18 NPT F / fixing M10				N 3 0	
1/4" - 18 NPT (F / vertical) / fixing M10				N 3 1	
customer				9 9 9	consult
Valve					
without				0	
with vent				1	
with vent (top)				2	
with vent (bottom)				3	
Material pressure port, flange, valves, etc.					
stainless steel 1.4401 (316 SS)				1 2	
customer				9 9	consult
Diaphragm / filling fluid					
stainless steel 1.4435 (316L) / silicone oil				1 1	
customer				9 9	consult
Seal					
FKM				1	
EPDM				3	
NBR				5	
PTFE				4	
customer				9	consult
Special version					
standard				0 0 0	
customer				9 9 9	consult



DPT 200

Differential Pressure Transmitter for Process Industry with HART®-Communication

accuracy according to IEC 60770:
0.075 % FSO

Differential pressure

from 1 mbar up to 20 bar

Static pressure

max. 400 bar

Output signal

2-wire: 4 ... 20 mA

Special characteristics

- ▶ static over pressure 400 bar
- ▶ rangeability max. 100:1
- ▶ aluminium die cast case
- ▶ HART®-communication
- ▶ output signal: linear or square root extraction






Optional versions

- ▶ Ex-version group I
 - Ex ia = intrinsically safe version for firedamp mines
- ▶ Ex-version group II
 - Ex ia = intrinsically safe version
 - Ex d = flameproof enclosure
- ▶ LC display
- ▶ stainless steel housing

The differential pressure transmitter DPT 200 has been especially designed for the process industry and can be used for level measurement of closed, pressurized tanks, pump or filter controlling, etc.

DPT 200 can be equipped with various chemical seals and different membrane materials to reach an optimal adaptation to the application.

Preferred areas of use are

-  Oil and gas industry
-  Chemical and petrochemical industry
-  Energy industry
-  Food and beverage
-  Paper industry



Differential pressure ranges					
Sensor type	A ¹	B	C	D	E
Differential pressure range dp	10 mbar	60 mbar	400 mbar	2.5 bar	20 bar
Setting limits (offset and span in this range freely adjustable)	-10 ... 10 mbar	-60 ... 60 mbar	-400 ... 400 mbar	-2.5 ... 2.5 bar	-20 ... 20 bar
Lowest permissible span	1 mbar	2 mbar	4 mbar	25 mbar	200 mbar
Permissible static pressure	70 bar	160 bar	160 bar	160 bar	160 bar
optional	-	-	400 bar	400 bar	400 bar
Rangeability TD (with respect to the differential pressure range dp)	10:1	30:1	100:1	100:1	100:1

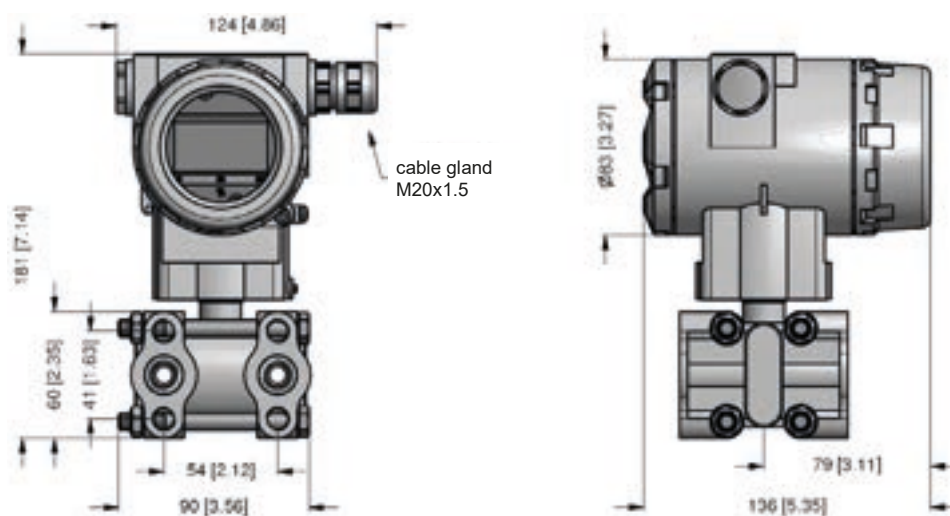
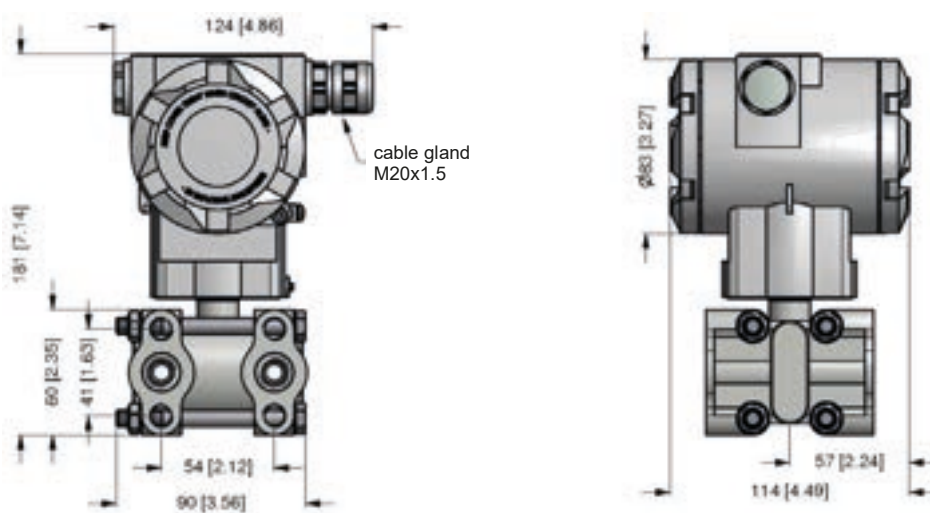
¹ only possible in combination with process connection (code N20), without valve (code 0) and with PTFE seal (code 4)

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA with HART® communication / $V_S = 16.5 \dots 42 V_{DC}$
Option IS-version	2-wire: 4 ... 20 mA with HART® communication / $V_S = 16.5 \dots 28 V_{DC}$
Error signal	Namur NE43 high / low (adjustable)
Performance	
Accuracy	turn-down $\leq 10:1$: $\leq \pm 0.075 \% \text{ FSO}$ turn-down $> 10:1$: $\leq \pm [0.0075 \times \text{turn-down}] \% \text{ FSO}$ sensor type A: turn-down $\leq 10:1$: $\leq \pm [0.075 + 0.025 \times \text{turn-down}] \% \text{ FSO}$ with turn-down = nominal pressure range / adjusted range (FSO = Full Scale Output)
Influence supply	$\leq 0.001 \% \text{ FSO} / 10 V$
Influence static pressure	type A: $\pm [0.015 \text{ mbar} + 0.1 \% \text{ of the adjusted range}] / 40 \text{ bar}$ type B: $\pm [0.06 \text{ mbar} + 0.075 \% \text{ of the adjusted range}] / 160 \text{ bar}$ type C: $\pm [0.2 \text{ mbar} + 0.05 \% \text{ of the adjusted range}] / 160 \text{ bar}$ type D: $\pm [1.25 \text{ mbar} + 0.05 \% \text{ of the adjusted range}] / 160 \text{ bar}$ type E: $\pm [10 \text{ mbar} + 0.05 \% \text{ of the adjusted range}] / 160 \text{ bar}$
Influence installation position	max. 400 Pa (can be compensated by zero-point correction)
Long term stability	type A: $\leq \pm (0.5 \% \times \text{differential pressure range dp}) / \text{year}$ at reference conditions type B: $\leq \pm (0.2 \% \times \text{differential pressure range dp}) / \text{year}$ at reference conditions type C - E: $\leq \pm (0.1 \% \times \text{differential pressure range dp}) / \text{year}$ at reference conditions
Permissible load	$R_{\max} = [(V_S - 16.5 V) / 0.023 A] \Omega$ HART®-communication: $R = 230 \Omega \dots 600 \Omega$
Response time	type A: approx. 1.6 sec type B: approx. 0.4 sec type C: approx. 0.2 sec type D: approx. 0.2 sec type E: approx. 0.1 sec
Damping	electronic: 0.1 ... 60 sec plus response time
Thermal effects (offset and span)	
Temperature range -20 ... +65°C	type A: $\pm [0.45 \times \text{turn-down} + 0.25] \% \text{ of the adjusted range}$ type B: $\pm [0.30 \times \text{turn-down} + 0.20] \% \text{ of the adjusted range}$ type C - E: $\pm [0.20 \times \text{turn-down} + 0.10] \% \text{ of the adjusted range}$
Temperature range -40 ... -20°C and +65 ... +100°C	type A: $\pm [0.45 \times \text{turn-down} + 0.25] \% \text{ of the adjusted range}$ type B: $\pm [0.30 \times \text{turn-down} + 0.20] \% \text{ of the adjusted range}$ type C - E: $\pm [0.20 \times \text{turn-down} + 0.10] \% \text{ of the adjusted range}$
Permissible temperatures	
Environment / storage	without display: -40 ... 85 °C with display: -20 ... 65 °C (85°C without function)
Media wetted parts	silicone oil: -40 ... 100 °C (information: +125 °C short time, max. 30 min.) fluorolube oil: -40 ... 100 °C (information: +125 °C short time, max. 30 min.)
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Mechanical stability	
One-sided overload	according to the maximum static pressure of differential pressure sensor
Vibration	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 1 msec according to DIN EN 60068-2-27
Filling fluids	
Standard	silicone oil (-40...125 °C)
Option (on request)	fluorolube oil (-40...125 °C) others on request

Materials	
Pressure port / flange	stainless steel 1.4401 (316) others on request
Housing	standard: aluminium die cast with epoxy painting (blue) option: stainless steel 1.4301 (304) others on request
Cable gland	aluminium die cast housing: PA grey (for cable-Ø 5 ... 9 mm) stainless steel housing: stainless steel 1.4404 (316L) (for cable-Ø 7 ... 12 mm) option IS-version: specified under "Explosion protection"
Vent and dump valves, blanking plugs, type plate	stainless steel 1.4401 (316) others on request
Bolts and nuts	steel, zinc flake coated
Seals	standard: FKM (-30 ... 250 °C) options: EPDM (-40 ... 125 °C) NBR (-40 ... 125 °C) PTFE (-180 ... 250 °C) others on request
Diaphragm	standard: stainless steel 1.4435 (316L) option: Hastelloy® C-276 (2.4819) others on request
Media wetted parts	pressure port, seal, diaphragm
Explosion protection – aluminium die cast housing	
Approval AX18-DPT200 intrinsically safe version	IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group II: II 1/2G Ex ia IIC T4 Ga/Gb / II 2D Ex ia IIIC T 85 °C Db safety technical maximum values: $P_i = 660 \text{ mW}$, $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $C_i = 29.7 \text{ nF}$, L_i negligible permissible temperatures for environment: -40 ... 60 °C cable gland in PA grey; for cable-Ø 5 ... 9 mm
Approval AX18B-DPT200 flameproof enclosure	IBExU 15 ATEX 1110 X / IECEx IBE 16.0006X group II: II 2G Ex db IIC T6 Gb permissible temperatures for environment: -40 ... 65 °C cable gland in brass; for cable-Ø 10 ... 14 mm
Explosion protection – stainless steel housing	
Approval AX18-DPT200 intrinsically safe version	IBExU 14 ATEX 1273 X / IECEx IBE 16.0005X group I (mines): I M1 Ex ia I Ma group II: II 1G Ex ia IIC T4 Ga / II 2D Ex ia IIIC T85°C Db safety technical maximum values: $P_i = 660 \text{ mW}$, $U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $C_i = 29.7 \text{ nF}$, L_i negligible permissible temperatures for environment: -40 ... 60 °C cable gland in stainless steel 1.4404 (316L); for cable-Ø 7 ... 12 mm
Miscellaneous	
Display (optionally)	type: LCD, lines: 2, digits: 8, bargraph: 0...100%, rotatability: 90°-steps and / or by turn of display module
Configuration	- offset / span local via 2 buttons - local configuration with an optional display - complete configuration via HART®
Ingress protection	IP 67
Installation position	any
Weight	approx. 3 kg (depending on version)
Current consumption	approx. 23 mA
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU
Wiring diagram	

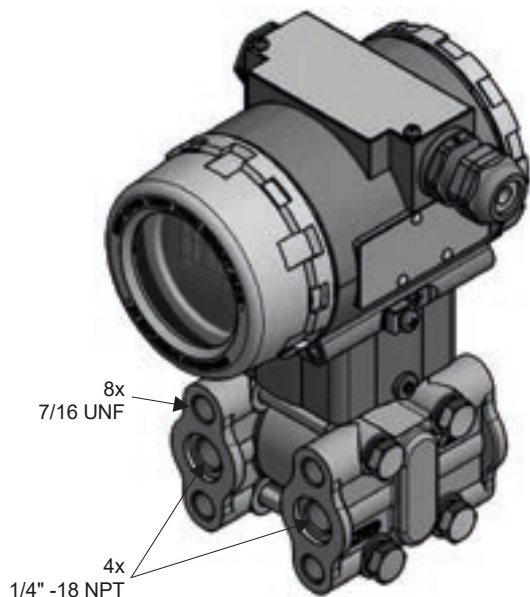
Pin configuration

Electrical connection	terminal clamps (for cable-Ø max. 2.5 mm ²)
Supply + (V _s +)	+
Supply / Test - (V _s -)	-
Test +	TEST +
Ground	⊕

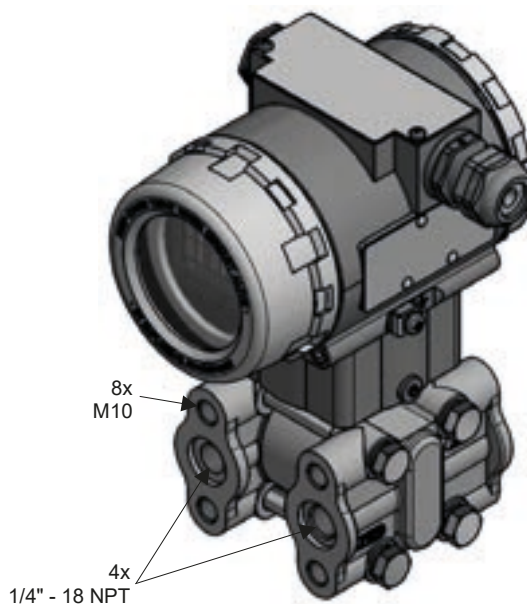
Dimensions (mm / in)**DPT 200 with display****DPT 200 without display**

Process connections

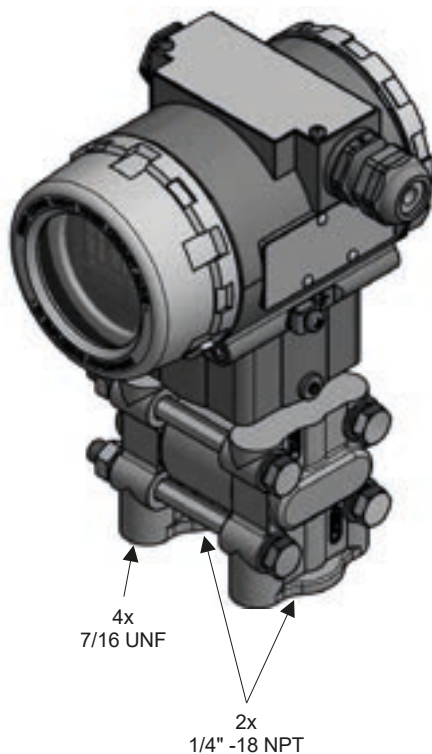
code N20 / N25
1/4" - 18 NPT / fixing 7/16 UNF



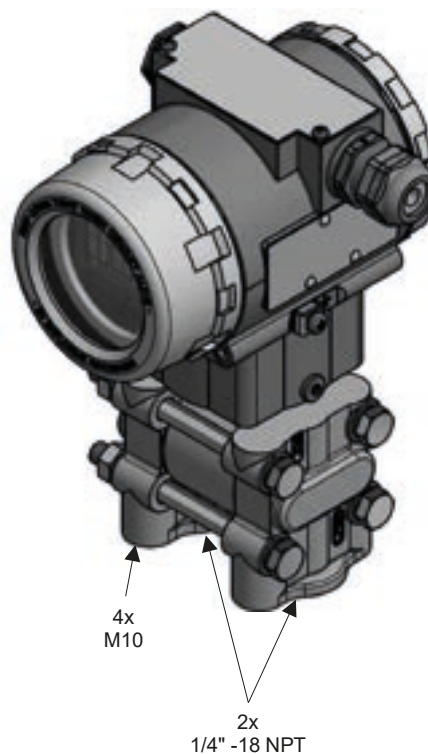
code N30
1/4" - 18 NPT / fixing M10



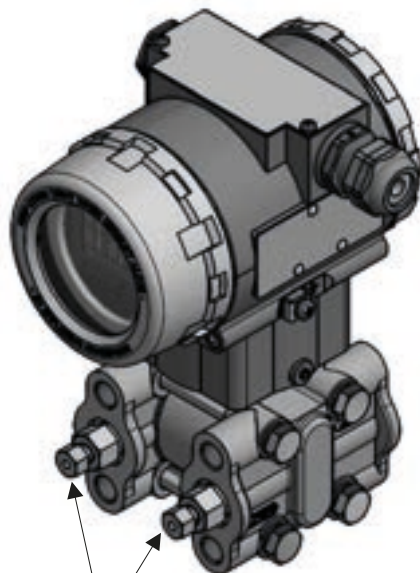
code N21
1/4" - 18 NPT vertical / fixing 7/16 UNF



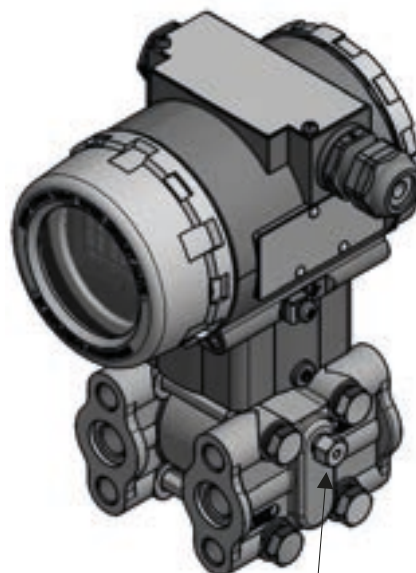
code N31
1/4" - 18 NPT vertical / fixing M10



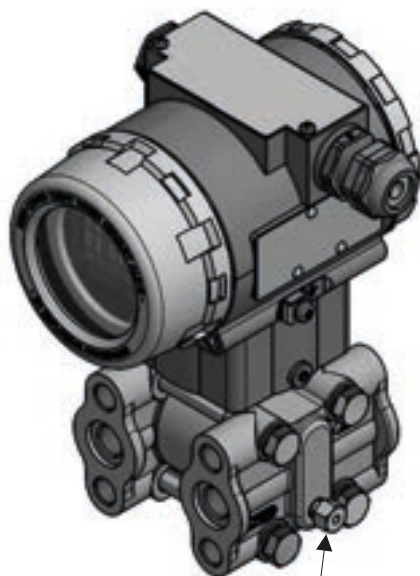
⇒ In scope of delivery two locking screws 1/4" - 18 NPT are included as standard.

Valves (optionally)**code 1**

vent position:
straight (2x)

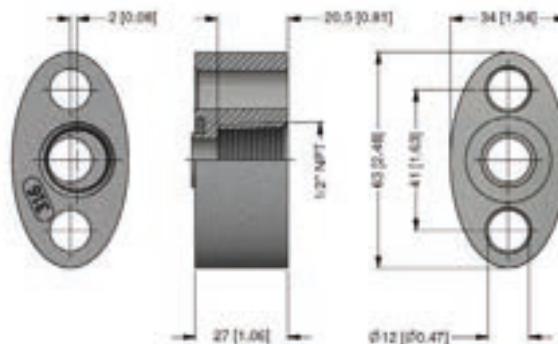
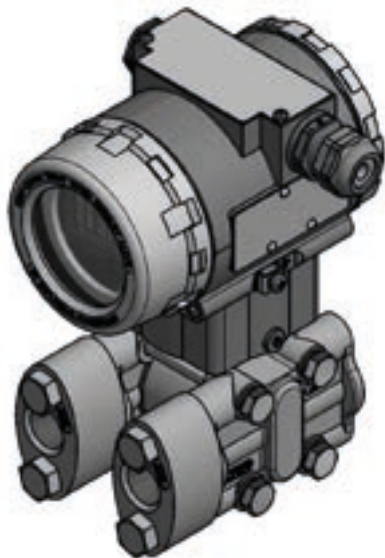
code 2

vent position:
top (2x)

code 3

vent position:
bottom (2x)

Oval flange adapter 1/2" NPT female

**Technical data**

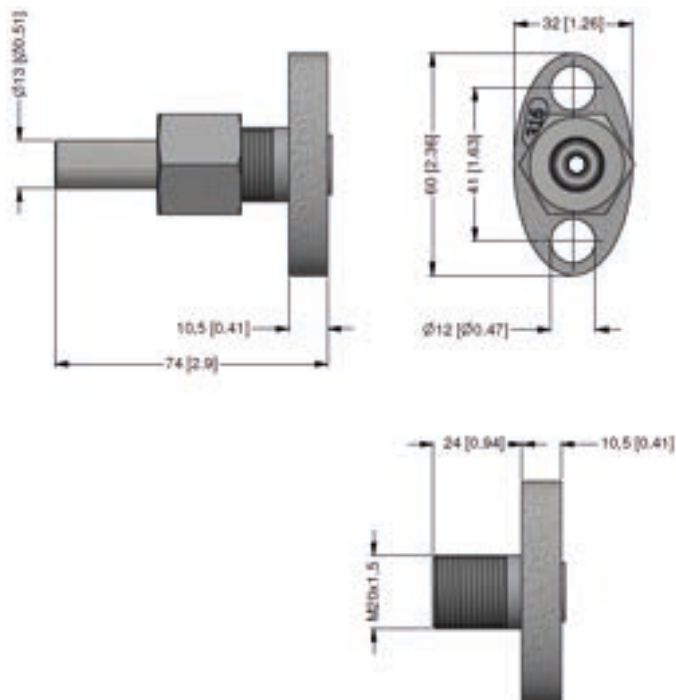
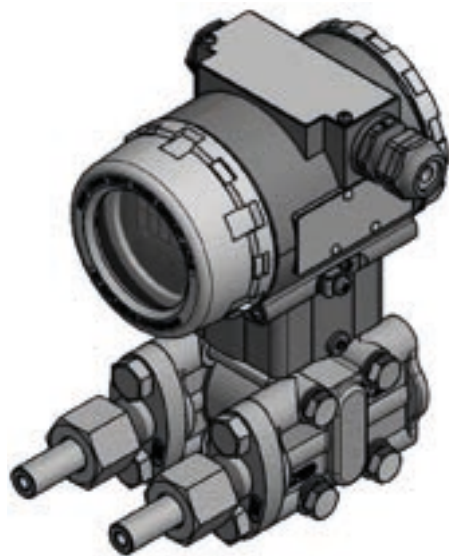
Material of adapter	stainless steel 1.4401 (316)
Weight	approx. 300 g
Scope of delivery	two adapter, four locking screws 7/16 UNF x 1 3/4" A2

Ordering type**Ordering code**

Oval flange adapter with 1/2" NPT female

Z1004181

Oval flange adapter M20x1.5 male with tube Ø 13 mm (optionally with volume reduced flange - code N25)

**Technical data**

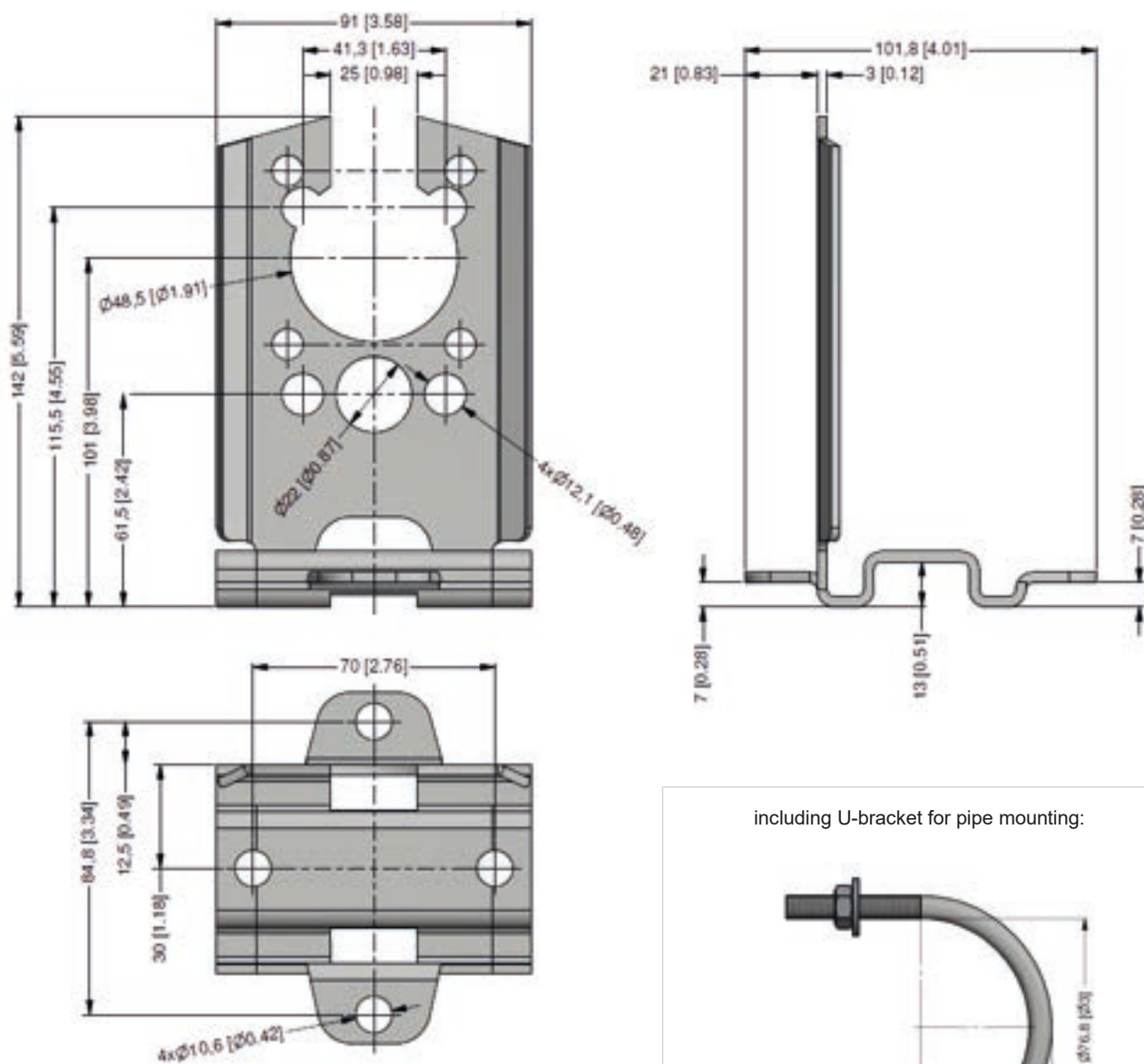
Material of adapter / tube	stainless steel 1.4401 (316)
Weight	approx. 250 g
Scope of delivery	two adapter, four locking screws 7/16 UNF x 1" A2

Ordering type**Ordering code**

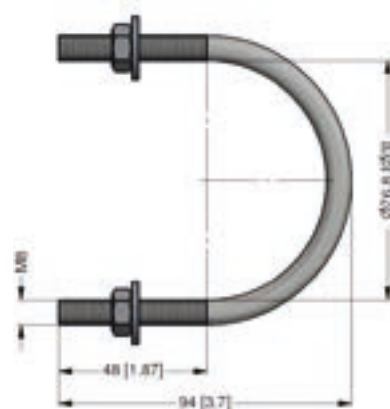
Oval flange adapter M20x1.5 male with tube

Z1004182

Mounting bracket



including U-bracket for pipe mounting:



Technical data

Material of mounting bracket	stainless steel 1.4301 (304)
Weight	approx. 500 g
Scope of delivery	mounting bracket, four locking screws 7/16 UNF x 3/4" A2, U-bracket for pipe mounting with two nuts

Ordering type

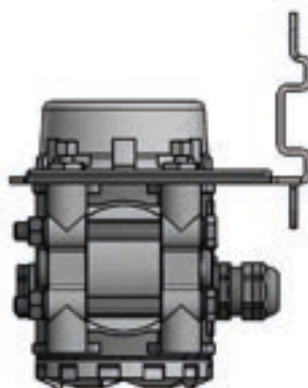
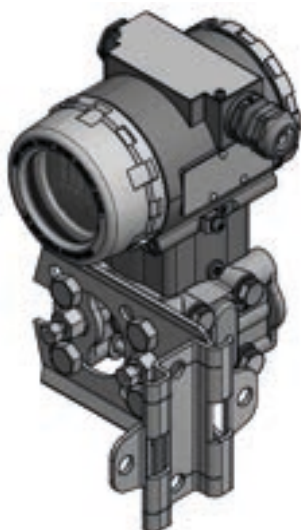
Mounting bracket

Ordering code

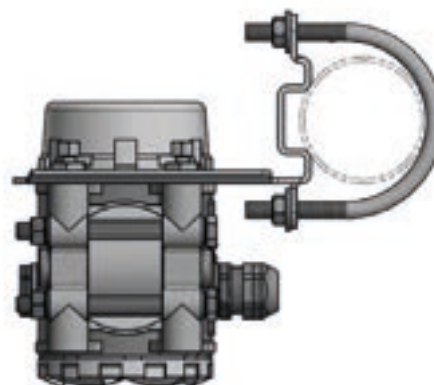
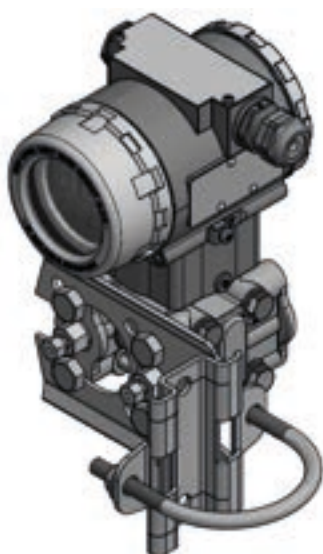
Z1004179

Mounting variants for mounting bracket

wall mounting



pipe mounting



HART® is a registered trademark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc.

Ordering code DPT 200

DPT 200		<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	
Pressure																				
differential pressure		3	4	3																
Input		[bar]																		
type A:	0 ... 1 mbar up to	0 ... 10 mbar		1	A															
type B:	0 ... 2 mbar up to	0 ... 60 mbar			B															
type C:	0 ... 4 mbar up to	0 ... 400 mbar			C															
type D:	0 ... 25 mbar up to	0 ... 2.5 bar			D															
type E:	0 ... 200 mbar up to	0 ... 20 bar			E															
	customer			9																consult
Maximun static pressure																				
	70 bar (only type A)			7																
	160 bar (type B - E)			1																
	400 bar (type C - E)			4																
Output																				
	4 ... 20 mA / 2-wire				H															
	with HART®-communication																			
	group II Ex ia 4 ... 20 mA / 2-wire				I															
	with HART®-communication																			
	group II Ex d 4 ... 20 mA / 2-wire				G															
	with HART®-communication			2																
	group I Ex ia 4 ... 20 mA / 2-wire				FH															
	with HART®-communication (mines)			3																
	customer			9																consult
Accuracy																				
	0.075 %				1	7														
Housing																				
	aluminium				L															
	stainless steel 1.4301 (304)				2															
Display																				
	without display				A	N														
	with backlight display				A	L														
Electrical connection																				
	terminals / cable gland M20x1.5					A	K	0												
	customer					9	9	9											consult	
Process connection H-side / L-side (identical)																				
	1/4" - 18 NPT / fixing 7/16 UNF					N	2	0			N	2	0							
	1/4" - 18 NPT / fixing M10					N	3	0			N	3	0							
	1/4" - 18 NPT, vertical / fixing 7/16 UNF					N	2	1			N	2	1							
	1/4" - 18 NPT, vertical / fixing M10					N	3	1			N	3	1							
	1/4" - 18 NPT / fixing 7/16 UNF					N	2	5			N	2	5							
	with volume reduced flange																			
	customer					9	9	9			9	9	9						consult	
Valve H-side / L-side (identical)																				
	without							0			0									
	with vent (straight)							1			1									
	with vent (top)							2			2									
	with vent (bottom)							3			3									
Material flange, valves																				
	stainless steel 1.4401 (316)										1	2								
Diaphragm / filling fluid																				
	stainless steel 1.4435 (316L) / silicone oi											1	1							
	Hastelloy® C-276 (2.4819) / silicone oil											H	1							
	customer											9	9						consult	
Seal																				
	FKM													1						
	EPDM													3						
	NBR													5						
	PTFE													4						
	customer													9						consult
Special version																				
	standard														0	0	0	consult		
	customer														9	9	9			
Accessories																				
	oval flange adapter 1/2" NPT female																	Z1004181		
optionally with N25	oval flange adapter																	Z1004182		
	M20x1.5 male with tube																	Z1004179		
	mounting bracket																			
	in stainless steel 1.4301 (304)																			

¹ only possible in combination with process connection (code N20), without valve (code 0) and with PTFE seal (code 4)

² only in combination with aluminium housing

³ only in combination with stainless steel housing

⁴ only in combination with process connection (code N20 or N30)

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DMD 331

Differential Pressure Transmitter for Liquids and Gases

Stainless Steel Sensor

accuracy according to IEC 60770:
0.5 % FSO

Differential pressure

from 0 ... 20 mbar up to 0 ... 16 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

Special characteristics

- ▶ differential pressure wet / wet
- ▶ permissible static pressure -onesided- up to 30 times of differential pressure range
- ▶ compact design
- ▶ mechanical robust and reliable at dynamic pressures as well as shock and vibration

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe
for gases and dust
- ▶ different electrical and mechanical connections
- ▶ customer specific versions

The DMD 331 is a differential pressure transmitter for industrial applications and is based on a piezoresistive stainless steel sensor, which can be pressurized on both sides with fluids or gases compatible with SST 1.4404 (316L) and 1.4435 (316L).

The compact design allows an integration of the DMD 331 in machines and applications with limited space. The DMD 331 calculates the difference between the pressure on the positive and the negative side and converts it into a proportional electrical signal.

Preferred areas of use are



Plant and machine engineering



Energy industry

Preferred used for



Water

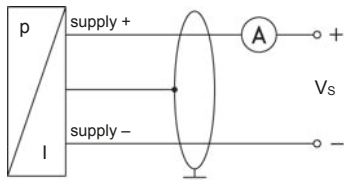


Input pressure range						
Nominal pressure [bar]	0.2	0.4	1	2.5	6	16
Differential pressure range [bar]						
TD 1 : 1	0 ... 0.2	0 ... 0.4	0 ... 1	0 ... 2.5	0 ... 6	0 ... 16
up to	up to	up to	up to	up to	up to	up to
TD 1 : 10	0 ... 0.02	0 ... 0.04	0 ... 0.1	0 ... 0.25	0 ... 0.6	0 ... 1.6
Permissible static pressure, one-sided [bar]	0.5	1	3	6	20	60

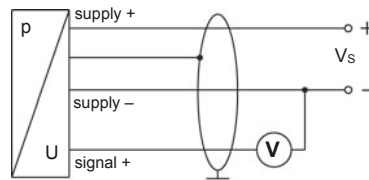
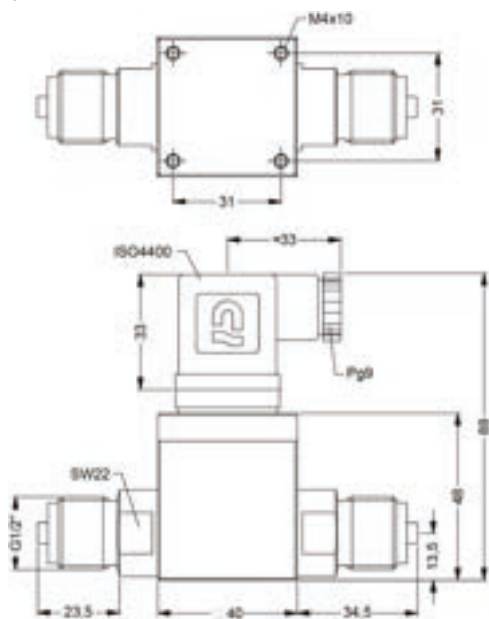
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$
Option IS-version	2-wire: 4 ... 20 mA / $V_S = 14 \dots 28 V_{DC}$
Option 3-wire	3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$
Performance	
Accuracy ¹	for ranges of max. input pressure $P_N > 1$ bar (codes C, D, E) $\leq \pm 0.5$ % FSO (differential pressure range with TD from 1:1 up to 1:5) $\leq \pm 1$ % FSO (differential pressure range with TD > 1:5 up to 1:10) for ranges of max. input pressure $P_N \leq 1$ bar (codes A, B, F) $\leq \pm 0.5$ % FSO (differential pressure range with TD from 100 to 50 % from nominal pressure) $\leq \pm 1$ % FSO (differential pressure range with TD > 50 to 10 % from nominal pressure)
Permissible load	current 2-wire: $R_{max} = [(V_S - V_S \text{ min}) / 0.02 A] \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / $k\Omega$
Long term stability	$\leq \pm 0.2$ % FSO / year at reference conditions
Response time	< 5 msec
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects ² (Offset and Span) / Permissible temperatures	
Nominal pressure P_N [bar]	0.2 0.4 ≥ 1.0
Tolerance band [% FSO]	$\leq \pm 2.5$ $\leq \pm 2$ $\leq \pm 1.5$
TC, average [% FSO / 10 K]	± 0.4 ± 0.3 ± 0.2
in compensated range [°C]	0 ... 50 0 ... 70
Permissible temperatures	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 100 °C
² relating to nominal pressure range	
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec
Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	aluminium, black anodized
Seals (media wetted)	FKM / others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm
Miscellaneous	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 250 g
Operational life	100 million load cycles
Ingress protection	IP 65
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU
Explosion protection (only for 4 ... 20 mA / 2 wire)	
Approvals	IBExU 08 ATEX 1125 X
DX13A-DMD 331	zone 1: II 2G Ex ia IIC T4 Gb zone 21: II 2D Ex ia IIIC T85°C Db
Safety technical maximum values	$U_i = 28 V_{DC}$, $I_i = 93$ mA, $P_i = 660$ mW, $C_i \leq 1$ nF, $L_i \leq 10$ μ H, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	-25 ... 65°C
Pin configuration	
Electrical connection	ISO 4400
Supply +	1
Supply -	2
Signal + (only 3-wire)	3

Wiring diagrams

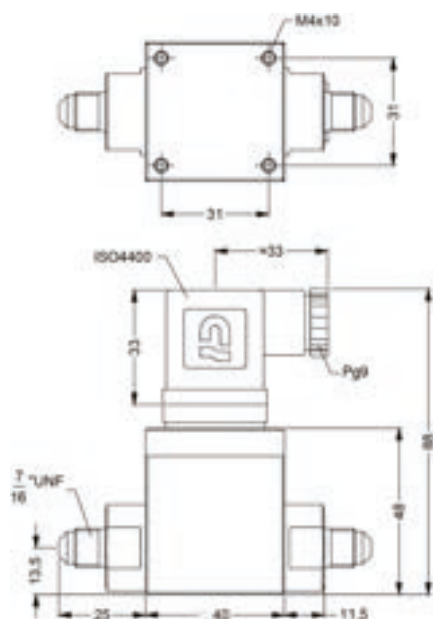
2-wire-system (current)



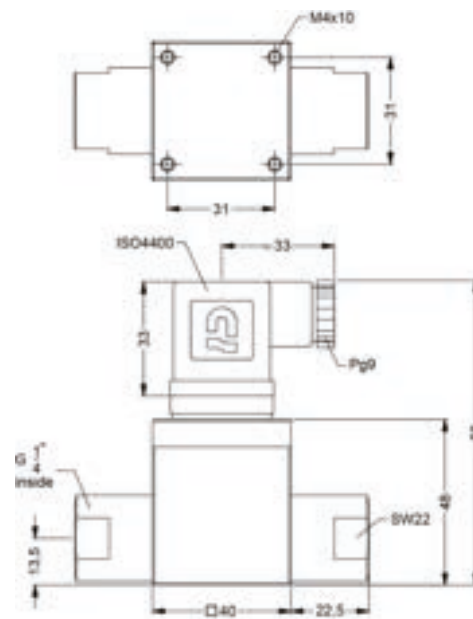
3-wire-system (voltage)

**Mechanical connection (dimensions in mm)****standard**

G1/2" EN 837

option

7/16" UNF DIN 3866



G1/4" internal

DMD 331

			-		-					-		-			-				-				-		
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BD|SENSORS www.bdsensors.de



DMD 341

Differential Pressure Transmitter for Gases and Compressed Air in Compact Version

Silicon Sensor

accuracy according to IEC 60770:
0.35 % / 1% / 2%

Differential pressure

from 0 ... 6 mbar up to 0 ... 1000 mbar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

Special characteristics

- ▶ aluminium housing
- ▶ suited for non-aggressive gases and compressed air

Optional versions

- ▶ customer specific versions

The DMD 341 is a differential pressure transmitter for non-aggressive gases and compressed air. Because of its compact and robust aluminium housing it is particularly suited for machine and plant engineering.

Basic element of the DMD 341 is a piezo-resistive silicon sensor, which features high accuracy and excellent long term stability.

Preferred areas of use are



Plant and machine engineering



Heating and air conditioning

Preferred used for



Compressed air,
non-aggressive gases



Input pressure range											
Nominal pressure p_N (over, differential pressure) [mbar]	0...6	0...10	0...20	0...40	0...60	0...100	0...160	0...250	0...400	0...600	0...1000
Nominal pressure p_N symmetric (differential pressure) [mbar]	± 6	± 10	± 20	± 40	± 60	± 100	± 160	± 250	± 400	± 600	± 1000
Overpressure [mbar]	100	100	200	350	350	1000	1000	1000	1000	3000	3000

Output signal / Supply	
Standard	standard pressure range: 2-wire: 4 ... 20 mA / $V_S = 8 ... 32 V_{DC}$
Options 3-wire	standard pressure range: 3-wire: 0 ... 20 mA / $V_S = 14 ... 30 V_{DC}$ 0 ... 10 V / $V_S = 14 ... 30 V_{DC}$

Performance	
Accuracy ¹	$p_N > 160 \text{ mbar}$: $\leq \pm 0.35 \% \text{ FSO}$ $40 \text{ mbar} \leq p_N \leq 160 \text{ mbar}$: $\leq \pm 1 \% \text{ FSO}$ $p_N < 40 \text{ mbar}$: $\leq \pm 2 \% \text{ FSO}$
Permissible load	current 2-wire: $R_{\max} = [(V_S - V_{S \min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{\max} = 240 \Omega$ voltage 3-wire: $R_{\min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / k Ω
Long term stability	$\leq \pm 0.2 \% \text{ FSO} / \text{year}$ at reference conditions
Response time	< 5 msec

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (offset and span)				
Nominal pressure p_N [mbar]	≤ 10	≤ 20	≤ 250	> 250
Tolerance band [% FSO]	$\leq \pm 2$	$\leq \pm 1.5$	$\leq \pm 1$	$\leq \pm 0.5$
TC, average [% FSO / 10 K]	± 0.3	± 0.25	± 0.15	± 0.08
in compensated range	0 ... 60 °C			

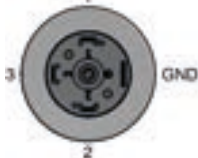


Permissible temperatures	
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 85 °C
Storage	-40 ... 100 °C

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec

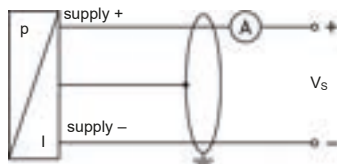
Materials	
Pressure port	G1/8" internal: aluminium, silver anodized flexible tube connection Ø6.6 x 11: brass, nickel plated
Housing	aluminium, silver anodised
Seal (media wetted)	PUR, bonded
Sensor	silicon, glass, RTV, ceramics Al ₂ O ₃ , nickel
Media wetted parts	pressure port, housing, seal, sensor

Miscellaneous	
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 250 g
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU

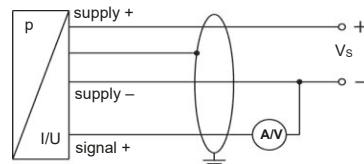
Pin configuration			
Electrical connection	ISO 4400	M12x1 (4-pin), metal	cable colour (IEC 60757)
			
Supply +	1	1	
Supply -	2	2	
Signal + (only 3-wire)	3	3	WH (white) BN (brown) GN (green)
Shield	ground pin 	4	GYNE (green-yellow)

Wiring diagrams

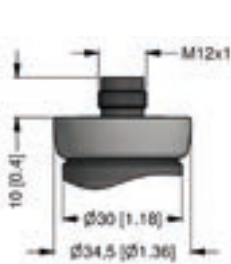
2-wire-system (current)



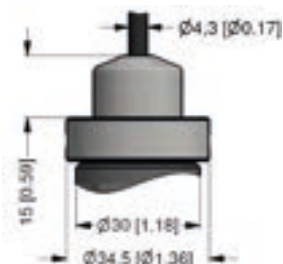
3-wire-system (current / voltage)

**Electrical connections (dimensions mm / in)**

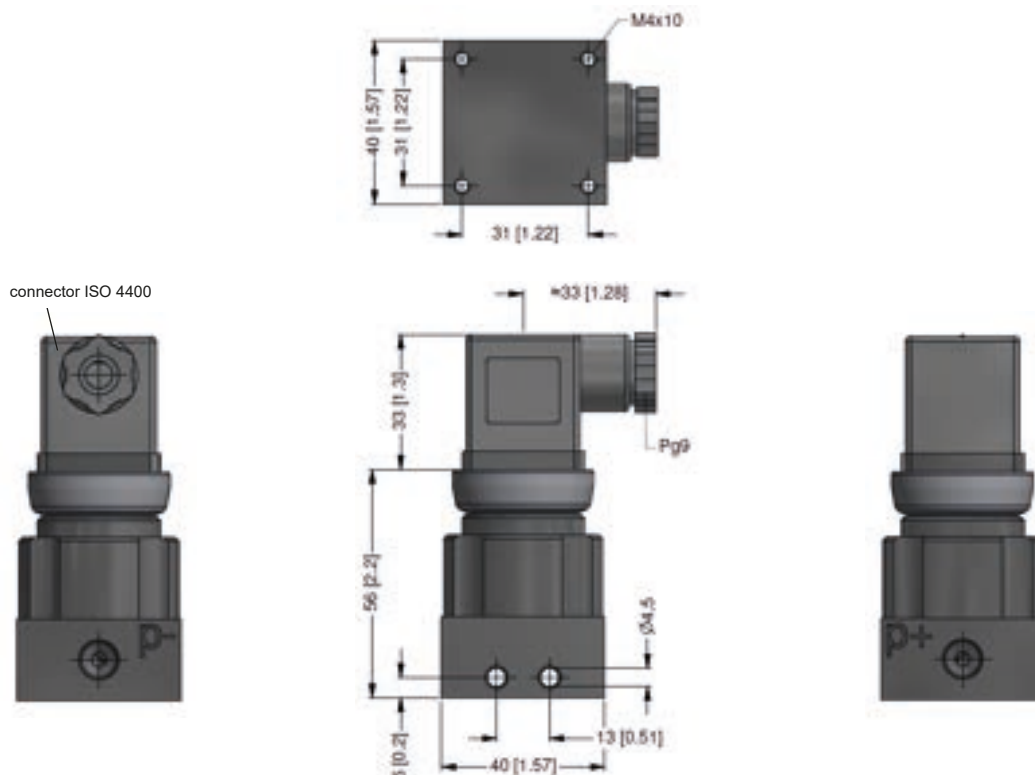
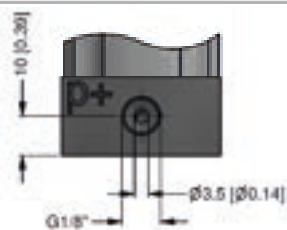
ISO 4400 (IP 65)



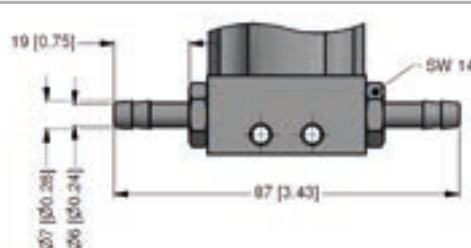
M12x1, 4-pin (IP 67)

cable outlet with PVC-cable (IP 67) ²

² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); optionally cable with ventilation tube

Dimensions (mm / in)**Mechanical connection (dimensions mm / in)**

G1/8" internal thread



Ø6.6x11 (for flex. tubes Ø6)

Ordering code DMD 341

DMD 341

			-				-		-		-			-			-		-		
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Pressure																			
	differential pressure	3	3	0															
	gauge pressure	3	3	1															
Input		[mbar]																	
	6				0	0	6	0											
	10				0	1	0	0											
	20				0	2	0	0											
	40				0	4	0	0											
	60				0	6	0	0											
	100				1	0	0	0											
	160				1	6	0	0											
	250				2	5	0	0											
	400				4	0	0	0											
	600				6	0	0	0											
	1000				1	0	0	1											
	-6 ... 6			S	0	0	6												consult
	-10 ... 10			S	0	1	0												consult
	-20 ... 20			S	0	2	0												consult
	-40 ... 40			S	0	4	0												consult
	-60 ... 60			S	0	6	0												consult
	-100 ... 100			S	1	0	0												consult
	-160 ... 160			S	1	6	0												consult
	-250 ... 250			S	2	5	0												consult
	-400 ... 400			S	4	0	0												consult
	-600 ... 600			S	6	0	0												consult
	-1000 ... 1000			S	1	0	2												consult
	customer			9	9	9	9												consult
Output																			
	4 ... 20 mA / 2-wire							1											
	0 ... 20 mA / 3-wire							2											
	0 ... 10 V / 3-wire							3											
	customer							9											consult
Accuracy																			
standard for p _N > 160 mbar:	0,35 % FSO							3											
standard for 40 mbar ≤ p _N ≤ 160 mbar:	1,0 % FSO							8											
standard for p _N < 40 mbar:	2,0 % FSO							G											
	customer							9											consult
Electrical connection																			
	male and female plug ISO 4400							1	0	0									
	male plug M12x1 (4-pin), metal							M	1	0									
	cable outlet with PVC cable (IP67) ¹							T	A	0									
	customer							9	9	9									consult
Mechanical connection																			
	G1/8" internal thread										Q	0	0						
	Ø 6.6 x 11 (for flex. tubes Ø 6)										Y	0	0						
	customer										9	9	9						consult
Seals																			
	PUR, bonded													6					
Special version																			
	standard															0	0	0	
	customer															9	9	9	consult

¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request



DMD 831

Differential Pressure Transmitter with Display and Contact for Fluids and Gases

- ▶ 2 piezoresistive stainless steel sensors
- ▶ differential pressure from 0 ... 1 bar up to 0 ... 70 bar
- ▶ display mode selectable: P+, P-, ΔP
- ▶ display and pressure ports rotatable



Technical Data

Input pressure range								
Nominal pressure ¹	[bar]	1	2	3.5	7	20	35	70
Differential pressure range	[bar]							
TD 1:1		0 ... 1	0 ... 2	0 ... 3.5	0 ... 7	0 ... 20	0 ... 35	0 ... 70
up to		up to	up to	up to	up to	up to	up to	up to
TD 1:10		0 ... 0.1	0 ... 0.2	0 ... 0.35	0 ... 0.7	0 ... 2	0 ... 3.5	0 ... 7
¹ nominal pressure corresponds to the maximal permissible static pressure (one-sided)								
Analogue signal / Supply								
Standard	3-wire: 4 ... 20 mA					24 V _{DC} ± 10 %		
Permissible load	500 Ω							
Accuracy ²	≤ ± 1 % BFSL							
² accuracy according to IEC 60770 (non-linearity, hysteresis, repeatability)								
Contact								
Number, type	standard: 1 PNP					option: 2 independent PNP		
Max. switching current	125 mA, short-circuit proof							
Switching accuracy ²	≤ ± 0.5 % FSO							
Repeatability	≤ ± 0.1 % FSO							
Switching cycles	> 100 x 10 ⁶							
Delay time	0 ... 100 sec							
Programming								
Adjustability	analogue output / contact refers to: pressure "P+" or pressure "P-" or pressure difference							
	turn-down: max. 1:10							
Thermal error ³ (offset and span) / Permissible temperatures								
Tolerance band	≤ ± 1.5 % FSO							
TC, average	± 0.2 % FSO / 10 K							
In compensated range	0 ... 70 °C							
Permissible temperatures	medium: -40 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °C							
³ relating to nominal pressure range								
Electrical protection								
Short-circuit protection	permanent							
Reverse polarity protection	no damage, but also no function							
Electromagnetic compatibility	emission and immunity according to EN 61326							

Mechanical stability

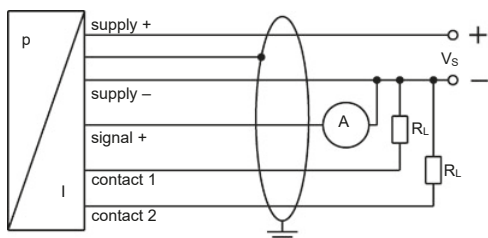
Vibration	10 g RMS (20 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	100 g / 11 msec	according to DIN EN 60068-2-27

Materials

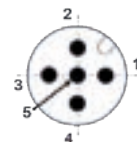
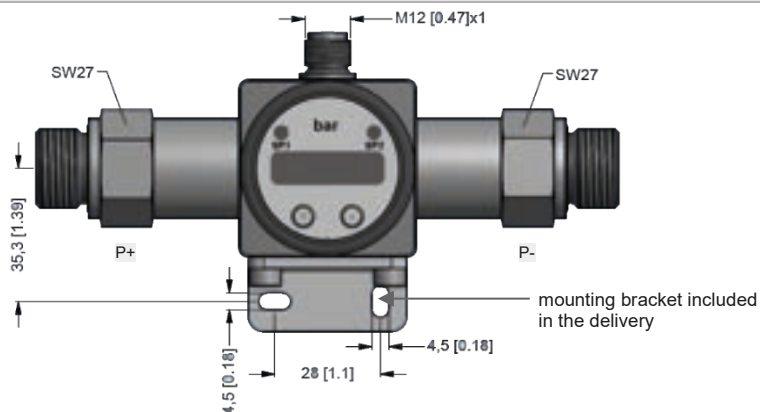
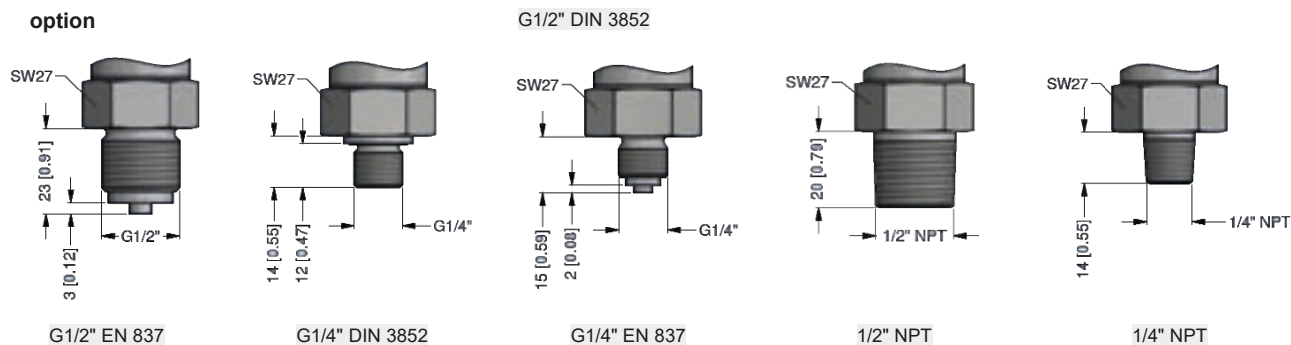
Pressure port	stainless steel 1.4404 (316L)
Housing	PA 6.6, Polycarbonate
Seals	FKM others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

Display	4-digit, red LED-display, digit size 7 mm; range of indication -1999 ... +9999; accuracy 0.1 % +/- 1 digit; digital damping 0.3 ... 30 sec (programmable)
Current consumption	max. 60 mA (without switching current)
Weight	approx. 350 g
Operational life	100 million load cycles
Ingress protection (device)	IP 65

Wiring diagram**Pin configuration**

Electrical connections	M12x1 (5-pin), plastic
Supply +	1
Supply -	3
Signal +	2
Contact 1	4
Contact 2	5
Shield	via pressure port

**Mechanical connections (dimensions mm / in)****standard****option**

Ordering code DMD 831

DMD 831

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[illegible]



DPS 200

Differential Pressure Transmitter for Gas and Compressed Air

Applications:

- ▶ for HVAC-applications

Characteristics:

- ▶ piezoresistive silicon sensor
- ▶ differential pressure range 6 ... 1000 mbar



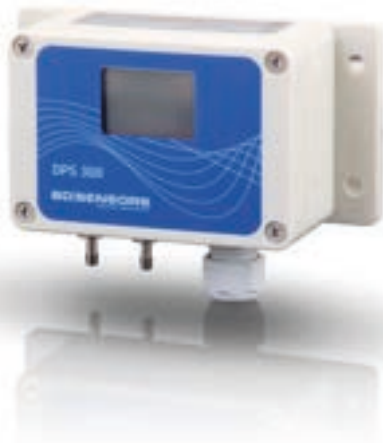
Technical Data

Input pressure range												
Nominal pressure P _N [mbar] (differential, gauge pressure)	6	10	16	25	40	60	100	160	250	400	600	1000
max. static pressure [mbar]	200	345	345	345	345	345	345	1000	1000	3000	3000	3000
Output signal / Supply												
Standard	3-wire: 0 ... 10 V					V _S = 19 ... 32 V _{DC}						
Option	2-wire: 4 ... 20 mA					V _S = 11 ... 32 V _{DC}						
	3-wire: 4 ... 20 mA					V _S = 19 ... 32 V _{DC}						
Performance												
Accuracy	≤ ± 1% FSO BFSL											
Permissible load	current 2-wire: R _{max} = [(V _S - V _{Smin}) / 0,02 A] Ω current 3-wire: 330 Ω voltage 3-wire: 10 kΩ											
Influence effects	supply: ≤ ± 0.1 % FSO/10V					load: ≤ ± 0.1 % FSO/kΩ						
Response time (0 ... 100%)	2-wire: adjustable by potentiometer in the range of 500 msec up to 2.5 sec 3-wire: adjustable by potentiometer in the range of 50 msec up to 2.5 sec											
Long term stability	≤ ± 0.5 % FSO / year at reference conditions											
Measuring rate	2-wire: 8 Hz					3-wire: 1 kHz						
Thermal effects (offset and span)												
Thermal error	≤ ± 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	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											

Miscellaneous		
LC-Display (optional)	visible range 32.5 x 22.5 mm; 5-digit 7-segment-main display, digit size 8 mm; 8-digit 14-segment-additional display, digit size 5 mm; 52-segment-bargraph	
Current consumption	2-wire: signal output current: max. 22 mA 3-wire: signal output current: max. 30 mA signal output voltage: 7.5 mA (20 mA short circuit) display: + 1 mA	
Units	following units can be set at factory: [bar], [mbar], [PSI], [Inch Hg], [cm Hg], [mm Hg], [hPa], [kPa], [MPa], [mH ₂ O], [Pa], [mmH ₂ O]	
Ingress protection	IP 54	
Weight	approx. 165 g	
Installation position	vertical ¹	
Operational life	100 million load cycles	
¹ The devices are calibrated in a vertical position with the 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)	
Wiring diagrams		
<div>2-wire-system (current)</div>	<div>3-wire-system (current / voltage)</div>	
Pin configuration		
Electrical connections	terminals 2-wire-system	terminals 3-wire-system
supply + supply - signal + (only for 3-wire)	2 / + 3 / - 1 (not connected)	2 / V _s + 3 / V _s - 1 / SIG
Dimensions (mm / in)		
without display		
with display		

Ordering code DPS 200

DPS 200				<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div></div><div></div><div></div></div>	-	<div><div><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DPS 300

Multi Range Differential Pressure Transmitter for Gas and Compressed Air

Silicon Sensor

accuracy according to IEC 60770:
0.5% FSO BFSL

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



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



Medical

Preferred areas of use are



Gas, compressed air



Input pressure range						
Nominal pressure p_N (differential, gauge pressure) [mbar]	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 (differential pressure) [mbar]	± 1.6	± 4	± 10	± 40	± 250	± 1000
Max. static pressure [mbar]	200	200	200	345	1000	3000

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

Performance			
Accuracy	for $p_N \geq 6$ mbar:	$\leq \pm 0.5\%$ FSO BFSL	
	for $p_N < 6$ mbar:	$\leq \pm 1\%$ FSO BFSL	
Permissible load	voltage 3-wire:	$R_{min} = 10 \text{ k}\Omega$	current 3-wire: 330 Ω
	current 2-wire:	$R_{max} = [(V_S - V_{Smin}) / 0,02 \text{ A}] \Omega$	
Influence effects	supply:	0.05 % FSO / 10 V	
	load:	0.05 % FSO / $\text{k}\Omega$	
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:	$\leq \pm 0.5\%$ FSO / year at reference conditions	
	for $p_N \geq 6$ mbar:	$\leq \pm 0.2\%$ FSO / year at reference conditions	
Measuring rate	12.5 Hz		

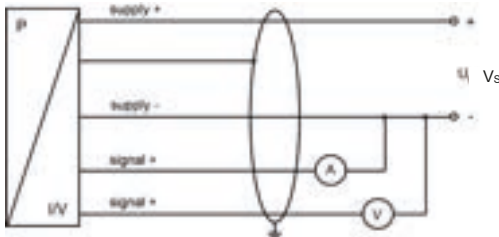
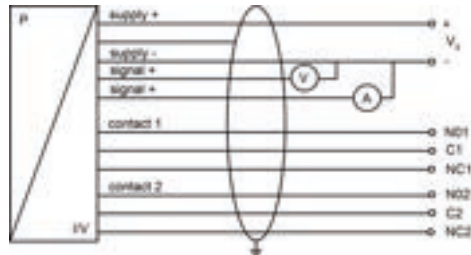
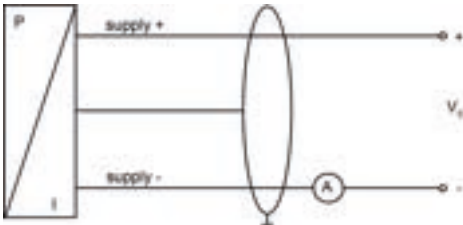
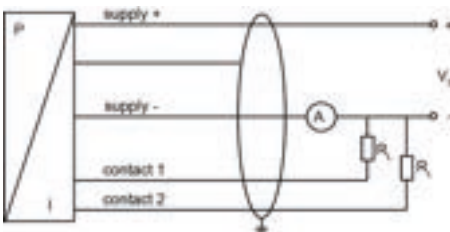
Contact (optional)		
	3-wire version	2-wire version
Number, form	2 x relay-output (NO/NC)	2 x PNP-open-collector-contact
switching current	max. 1 A	max. 125 mA resistant; short-circuit-proof
switching voltage	max. 60 V_{DC} ; max. 40 V_{AC}	
switching capacity	max. 60 W	
Accuracy of switching points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

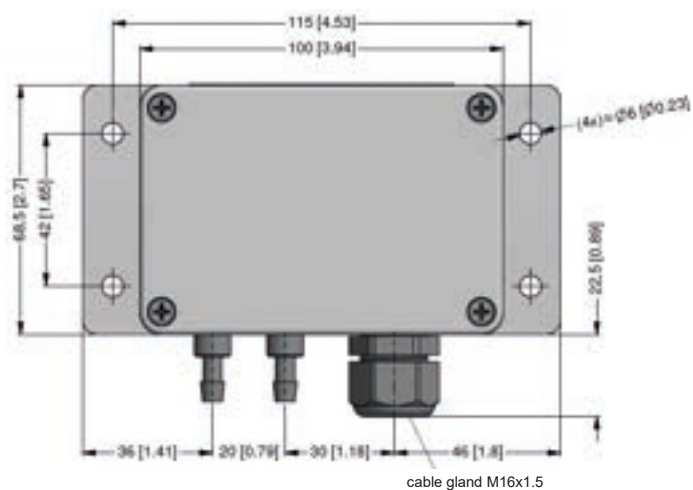
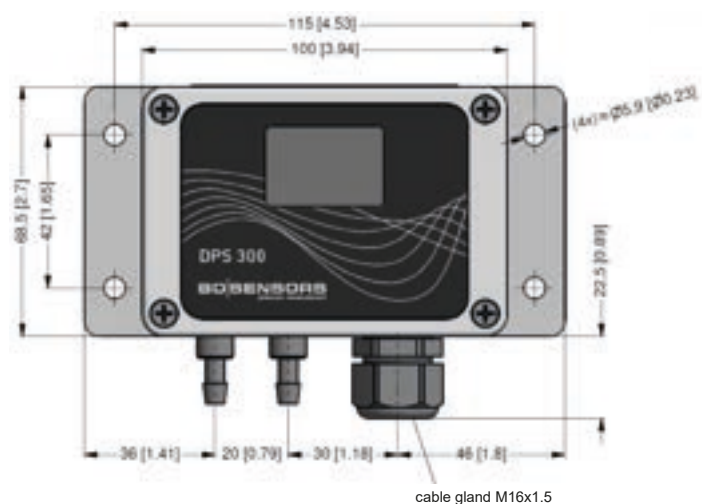
Thermal effects (offset and span)		
Thermal error	for $p_N < 6$ mbar:	$\leq \pm 0.5\%$ FSO / 10 K (typ.)
	for $p_N \geq 6$ mbar:	$\leq \pm 0.3\%$ FSO / 10 K (typ.)
in compensated range	0 ... 50 °C	

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 (optionally)																			
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	<ul style="list-style-type: none">- 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 ¹																		
Operational life	100 million load cycles																		
¹ 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 mm ²																		
With ferrule	1 mm ²																		
Pin configuration																			
Standard	cable gland M16x1.5																		
Electrical connections	<table><tr><td></td><td>3-wire</td><td>2-wire</td></tr><tr><td>supply +</td><td>VS +</td><td>VS +</td></tr><tr><td>supply -</td><td>VS -</td><td>VS -</td></tr><tr><td>signal + (only for 3-wire)</td><td>Iout / Vout</td><td>-</td></tr><tr><td>contact 1</td><td>C1 / NO1 / NC1</td><td>S1</td></tr><tr><td>contact 2</td><td>C2 / NO2 / NC2</td><td>S2</td></tr></table>		3-wire	2-wire	supply +	VS +	VS +	supply -	VS -	VS -	signal + (only for 3-wire)	Iout / Vout	-	contact 1	C1 / NO1 / NC1	S1	contact 2	C2 / NO2 / NC2	S2
	3-wire	2-wire																	
supply +	VS +	VS +																	
supply -	VS -	VS -																	
signal + (only for 3-wire)	Iout / Vout	-																	
contact 1	C1 / NO1 / NC1	S1																	
contact 2	C2 / NO2 / NC2	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**

Ordering code DPS 300

DPS 300		<div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>															
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	0,5 % FSO BFSL							8									
$p_N < 6$ mbar	1,0 % FSO BFSL							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 mA² only in combination with display

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laboratory techniques



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heavy industry



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