



DS 200P

Electronic Pressure Switch

Pressure Ports And Process Connections With Flush Welded Stainless Steel Diaphragm

accuracy according to EN IEC 62828-2:
standard: 0.35 % span
option: 0.25 % span

Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

Contacts

1 or 2 independent PNP contacts, freely configurable

Analogue output

2-wire: 4 ... 20 mA

3-wire: 4 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- ▶ indication of measured values on a 4-digit LED display
- ▶ rotatable and configurable display module
- ▶ configurable contacts (switch on/switch off points, hysteresis/window mode, switch on/switch off)

Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases
- ▶ customer specific versions



The electronic pressure switch DS 200P is the successful combination of

- ▶ intelligent pressure switch
- ▶ digital display

and is suitable for the usage with viscous and pasty media.

As standard the DS 200P offers a PNP contact and a rotatable display module with 4-digit LED display. Optional versions like e.g. an intrinsically safe version and an analogue output complete the profile.

Preferred areas of use are

-  Food industry
-  Pharmacy



Input pressure range ¹																
Nominal pressure gauge ¹	[bar]	-1 ... 0*	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6	10	16	25	40
Nominal pressure abs.*	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6	10	16	25	40
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40	40	80	80	105
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50	50	120	120	210
Vacuum resistance		P _N ≥ 1 bar: unlimited vacuum resistance									P _N < 1 bar: on request					
¹ consider the pressure resistance of fitting and clamps																
*for 0 ... 1 bar abs. or -1 ... 0 bar gauge max. temperature 70 °C																
Contact ²																
Standard	1 PNP contact															
Options	2 independent PNP contacts															
Max. switching current	4 ... 20 mA / 2- and 3-wire: contact rating 125 mA, short-circuit resistant; V _{Switch} = V _S - 2V 0 ... 10 V / 3-wire: contact rating 125 mA, short-circuit resistant															
Accuracy of contacts ³	standard: P _N < 0.4 bar: ≤ ± 0.5 % span P _N ≥ 0.4 bar: ≤ ± 0.35 % span option: P _N ≥ 0.4 bar: ≤ ± 0.25 % span															
Repeatability	≤ ± 0.1 % span															
Switching frequency	max. 10 Hz															
Switching cycles	> 100 x 10 ⁶															
Delay time	0 ... 100 sec															
² max. 1 contact for 2-wire current signal with plug ISO 4400 as well as 2-wire current signal with IS-protection no contact possible with 3-wire in combination with plug ISO 4400																
³ accuracy according to EN IEC 62828-2- limit point adjustment (non-linearity, hysteresis, repeatability)																
Analogue output (optionally) / Supply																
2-wire current signal	4 ... 20 mA / V _S = 13 ... 36 V _{DC} permissible load: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω response time: < 10 msec															
2-wire current signal with IS-protection	4 ... 20 mA / V _S = 15 ... 28 V _{DC} permissible load: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω response time: < 10 msec															
3-wire current signal	4 ... 20 mA / V _S = 19 ... 30 V _{DC} adjustable (turn-down of span 5:1) ⁴ permissible load: R _{max} = 500 Ω response time: < 0.5 sec															
3-wire voltage signal	0 ... 10 V / V _S = 15 ... 36 V _{DC} permissible load: R _{min} = 10 kΩ response time: < 10 msec															
Accuracy ³	standard: P _N < 0.4 bar: ≤ ± 0.5 % span P _N ≥ 0.4 bar: ≤ ± 0.35 % span option: P _N ≥ 0.4 bar: ≤ ± 0.25 % span															
⁴ with turn-down of span the analogue signal is adjusted automatically to the new measuring range																
Thermal errors (Offset and Span) ⁵ / Permissible temperatures																
Nominal pressure P _N	[bar] -1 ... 0 < 0.40 ≥ 0.40															
Tolerance band	[% span] ≤ ± 0.75 ≤ ± 1.5 ≤ ± 0.75															
in compensated range	[°C] -20 ... 85 0 ... 50 -20 ... 85															
Permissible temperatures	medium ⁶ : -40 ... 125 °C for filling fluid silicon oil -10 ... 125 °C for filling fluid food compatible oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C															
Permissible temperature medium for cooling element ⁷	filling fluid silicon oil overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C ⁸ filling fluid food compatible oil overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C ⁸															
⁵ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions.																
⁶ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C																
⁷ max. temperature depends on the used sealing material, type of seal and installation																
⁸ also for P _{abs} ≤ 1 bar																
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	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6															
Shock	100 g / 11 msec according to DIN EN 60068-2-27															
Filling fluids																
Standard	silicon oil															
Options	food compatible oil (with FDA approval) (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request															
Materials																
Pressure port / Housing	stainless steel 1.4404 (316 L) others on request															
Display housing	PA 6.6, Polycarbonate															
Seals (media wetted)	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) clamp and dairy pipe: without															
Diaphragm	standard: stainless steel 1.4435 (316 L) option: Hastelloy® C-276 (2.4819); Tantalum on request															
Media wetted parts	pressure port, seals, diaphragm															

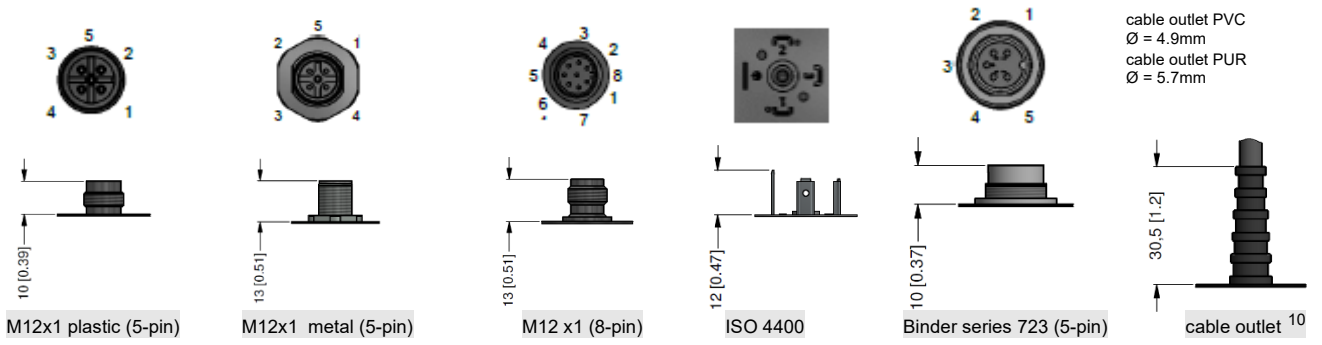
Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approval AX4-DS 200P	IBExU06ATEX1049 X zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)					
Safety technical max. values	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$					
Max. switching current ⁹	70 mA (max. permissible inductivity: 4.7 mH)					
Permissible temperatures for environment	-25 ... 70 °C					
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 $\mu\text{H}/\text{m}$					
⁹ the real switching current in the application depends on the power supply unit						
Miscellaneous						
Display	4-digit, red 7-segment-LED display, digit height 7 mm, range of indication -1999 ... +9999; accuracy 0.1 % \pm 1 digit; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)					
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH					
Current consumption (without contacts)	2-wire signal output current: max. 25 mA 3-wire signal output current: approx. 45 mA + signal current 3-wire signal output voltage: approx. 45 mA					
Ingress protection	IP 65					
Installation position	any (standard calibration in a vertical position with the pressure port connection down; different installation position for $P_N \leq 2 \text{ bar}$ have to be specified in the order)					
Surface roughness	pressure port $R_a < 0.8 \text{ }\mu\text{m}$ (media wetted parts) diaphragm $R_a < 0.15 \text{ }\mu\text{m}$ weld seam $R_a < 0.8 \text{ }\mu\text{m}$					
Weight	approx. 160 ... 250 g					
Operational life	$> 100 \times 10^6$ cycles					
CE-conformity	EMC Directive: 2014/30/EU					
ATEX Directive	2014/34/EU					
Wiring diagrams						
2-wire-system (current)			3-wire-system (current / voltage)			
Pin configuration						
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	cable colours (DIN 47100)
Supply +	1	1	1	1	1	wh (white)
Supply -	3	3	3	2	3	bn (brown)
Signal + (only 3-wire)	2	2	2	3	2	gn (green)
Contact 1	4	4	4	3	4	gy (grey)
Contact 2	5	5	5	-	5	pk (pink)
Contact 3	-	-	6	-	-	-
Contact 4	-	-	7	-	-	-
Shield	via pressure port	plug housing/pressure port	via pressure port	ground contact	plug housing/pressure port	ye/gn (yellow / green)

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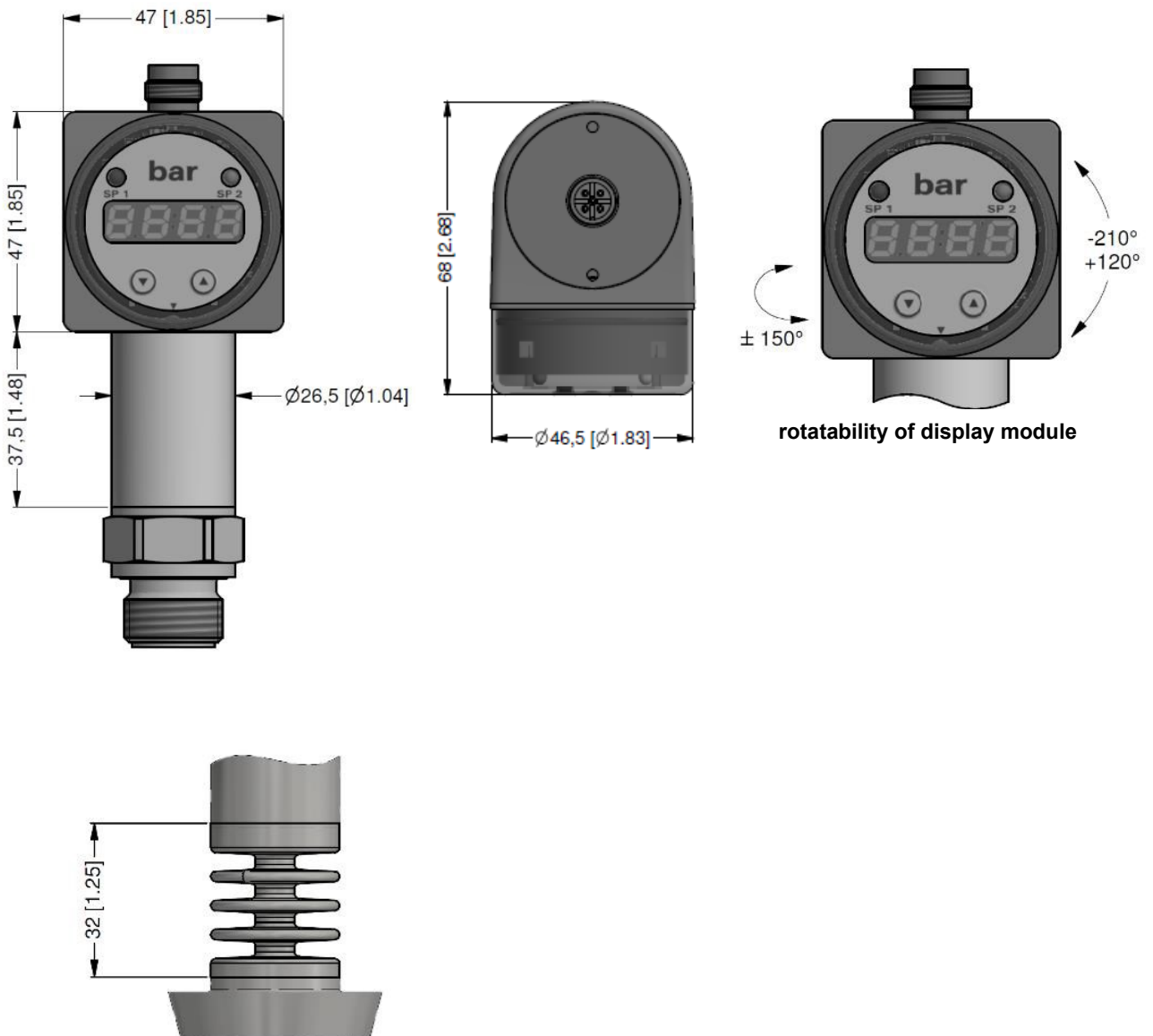
Technical Data

Electrical connections (dimensions in mm)



¹⁰ different cable types and lengths available, permissible temperature depends on kind of cable; standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70°C)

Dimensions (in mm)

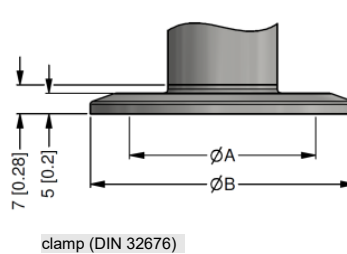
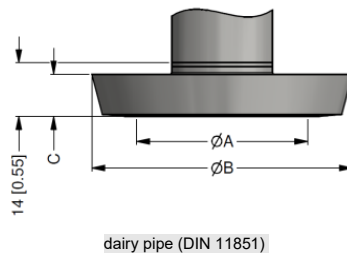
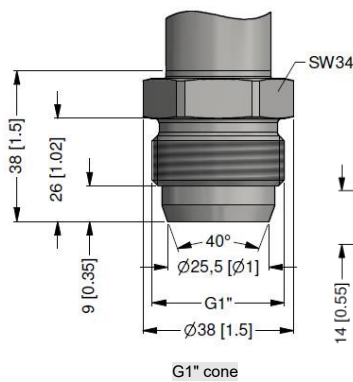
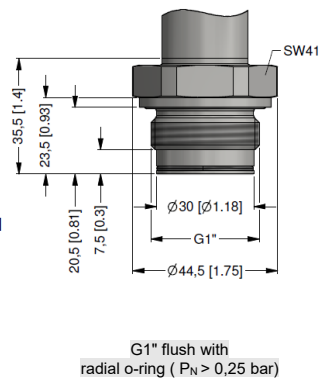
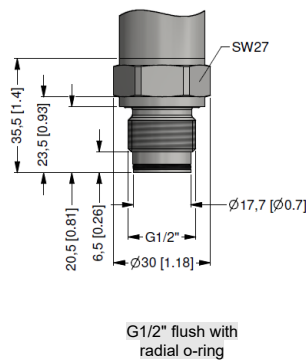
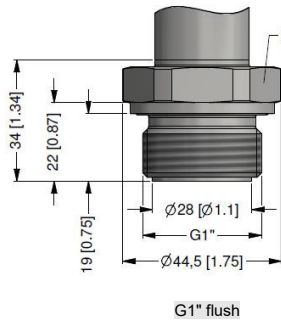
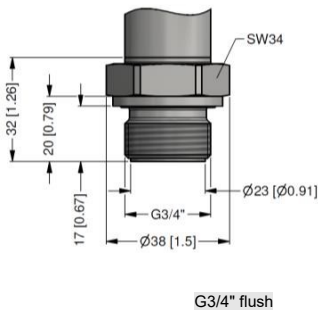
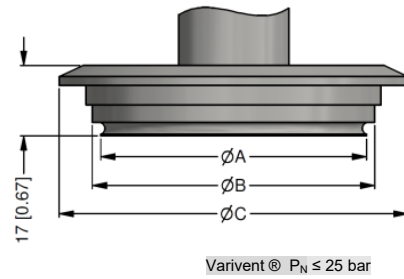
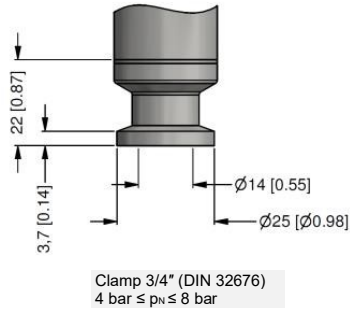
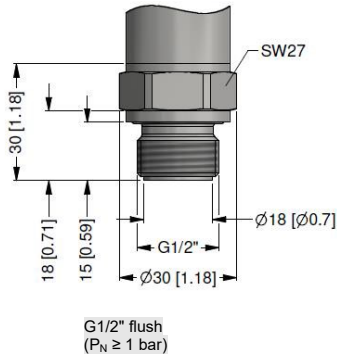


Cooling element up to 300 °C (optionally)

max. temperature depends on the used sealing material, type of seal and installation

Mechanical connections (dimensions in mm)

dimensions in mm [in]	
size	DN 40/50
A	64 [2.52]
B	68 [2.68]
C	84 [3.31]



dimensions in mm			
size	DN 25	DN 40	DN 50
A	23	32	45
B	44	56	68,5
C	10	10	11
P_N [bar]	$\geq 0,25$ ≤ 40	$\geq 0,25$ ≤ 40	$\geq 0,25$ ≤ 25

dimensions in mm				
size	3/4"	DN 25	DN 32	DN 50
A	14	23	32	45
B	25	50,5	50,5	64
P_N [bar]	≥ 4 ≤ 8	$\geq 0,25$ ≤ 16	≤ 16	≤ 16

↳ SIL- and SIL-Ex version: total length increases by 26.5 mm! ; ⇨ metric threads and other versions on request

This data sheet contains product specification. Properties are not guaranteed. Subject to change without notice.

Ordering code DS 200P

23.08.2024

DS 200P

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Pressure										
Gauge	7	8	5							
Absolute	7	8	6							
Input [bar]										
0 ... 0,1				1	0	0	0			
0 ... 0,16				1	6	0	0			
0 ... 0,25				2	5	0	0			
0 ... 0,4				4	0	0	0			
0 ... 0,6				6	0	0	0			
0 ... 1				1	0	0	1			
0 ... 1,6				1	6	0	1			
0 ... 2,5				2	5	0	1			
0 ... 4				4	0	0	1			
0 ... 6				6	0	0	1			
0 ... 10				1	0	0	2			
0 ... 16				1	6	0	2			
0 ... 25				2	5	0	2			
0 ... 40				4	0	0	2			
-1 ... 0				X	1	0	2			
Customer				9	9	9	9			
Customer - underpressure				X	X	X	X			
Analogue output										
4 ... 20 mA / 2-wire								1		
0 ... 20 mA / 3-wire								2		
0 ... 10 V / 3-wire								3		
4 ... 20 mA / 3-wire								7		
Intrinsic safety 4 ... 20 mA / 2-wire ¹								E		
Customer								9		
Switching output										
Without switching contact								0		
1 switching contact (3-wire output only with 5-pin connector) ^{1,2}								1		
2 switching contacts (only with 5-pin connector) ^{1,2}								2		
Accuracy										
0,5 % (P _N ≤ 0,4 bar)								5		
0,35 % (P _N > 0,4 bar)								3		
0,25 % (P _N > 0,4 bar)								2		
0,5 % including Calibration Certificate (P _N ≤ 0,4 bar)								T		
0,35 % including Calibration Certificate (P _N > 0,4 bar)								S		
0,25 % including Calibration Certificate (P _N > 0,4 bar)								R		
Table of measured values for accuracy 0,5 %								N		
Table of measured values for accuracy 0,35 %								M		
Customer								9		
Electrical connection										
Connector DIN 43650 (ISO 4400) (IP 65) ²								1	0	0
Cable gland PG7 / cable length specify (IP 67)								4	0	0
+ PVC cable / 1 m										
Connector M 12 x 1 (5-pin) (IP 65)								N	0	1
Connector M 12 x 1 (5-pin) (IP 65) - metal								N	1	1
Binder series 723 (5-pin) (IP 65)								A	0	0
Customer								9	9	9
Mechanical connection										
G 1/2" DIN 3852 (P _N > 2,5 bar) (only with seals)								Z	0	0
M 20 x 1,5 DIN 3852 (P _N > 2,5 bar) (only with seals)								D	0	4
G 3/4" DIN 3852 (P _N > 0,6 bar) (only with seals)								Z	3	0
G 1" DIN 3852 (P _N > 0,25 bar) (only with seals)								Z	3	1
G 1 1/2" DIN 3852 (only with seals)								Z	3	3
G 2" DIN 3852								Z	3	4
G 1" DIN 3852 flush 2x O ring (P _N > 0,25 bar)								Z	5	7
G 1/2" DIN 3852 flush 2x O ring (P _N > 1 bar)								Z	6	1
G 3/4" DIN 3852 flush 2x O ring (P _N > 1 bar)								Z	6	6
1/8" - 27 NPT (without seals, monel pressure port, tantal membrane)								Z	9	2
G1" cone seal (without seals)								K	3	1
Clamp DN 3/4" (4 bar < P _N < 8 bar) (without seals)								C	6	8



Clamp DN 1" (DN 25) (0,4 bar < P _N < 16 bar) (without seals)	C 6 1						
Clamp DN 1 1/2" (DN 32) (0,4 bar < P _N < 16 bar) (without seals)	C 6 2						
Clamp DN 2" (DN 50) (0,4 bar < P _N < 16 bar) (without seals)	C 6 3						
DIN 11851 DN 25 (P _N > 0,6 bar) (without seals) ³	M 7 3						
DIN 11851 DN 40 (P _N > 0,4 bar) (without seals) ³	M 7 5						
DIN 11851 DN 50 (P _N > 0,25 bar) (without seals) ³	M 7 6						
"sandwich" DN 25 (without seals)	S 6 1						
"sandwich" DN 50 (without seals)	S 7 6						
"sandwich" DIN 2501 DN 80 (without seals)	S 8 0						
M 22 x 1,5 DIN 3852 (P _N > 2,5 bar) (only with seals)	D 1 5						
Flange DN 25/PN 40 DIN 2501 (without seals)	F 2 0						
Flange DN 40/PN 40 DIN 2501 (without seals)	F 2 2						
Flange DN 50/PN 40 DIN 2501 (without seals)	F 2 3						
Flange DN 80/PN 16 DIN 2501 (without seals)	F 1 4						
Flange DN 100/PN 16 DIN 2501 (without seals)	F 2 5						
Varivent® DN 40/50 (without seals)	P 4 1						
Customer	9 9 9						
Diaphragm							
Stainless steel 1.4435						1	
Hastelloy® C-276 (2.4819)						H	
Tantalum						T	
Customer						9	
Seals - wetted media (only for inch thread)							
Without seals (Clamp ,dairy pipe DIN, sandwich, flange, varivent)						0	
Viton (FKM)						1	
EPDM						3	
FFKM						7	
Customer						9	
Filling Fluids							
Silicone oil						1	
Edible oil for foodstuff industry (temperature max. 150 °C)						2	
Halocarbon						C	
Customer						9	
Special version							
Standard						0	0 0
With cooling element from 125 °C up to 150 °C						1	5 0
With cooling element from 150 °C up to 300 °C (max. 200 °C permanent)						2	0 0
Customer						9	9 9
3.1 Material Certificate for Membrane and Mechanical Connection							
Settings in temperature different from basic 20 °C (+/- 10 °C, max. 70 bar and 200 °C)							3.1 prot.

0,-...without additional charge

On request...in accordance with the producer

Surcharges for calibration are not subject to any discounts. Subject to change.

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet.

BD SENSORS reserves the right to change sensor specifications without further notice.

1 with IS version max. 1 contact is possible

2 with connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible

3 The cup nut for dairy pipe has to be mounted by production of pressure transmitter. The cup nut has to be ordered as separate position.

