



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

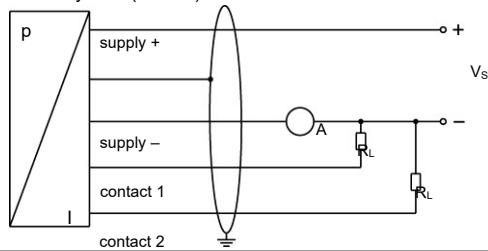


Input pressure range ¹																
Nominal pressure gauge ¹	[bar]	-1 ... 0*	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6	10	16	25	40
Nominal pressure abs.*	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6	10	16	25	40
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40	40	80	80	105
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	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)																

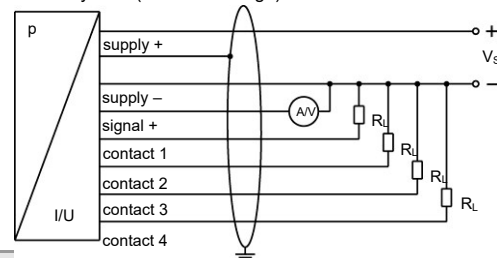
Approval AX4-DS 200P	IBExU06ATEX1049 X zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)
Safety technical max. values	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$
Max. switching current ⁹	70 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

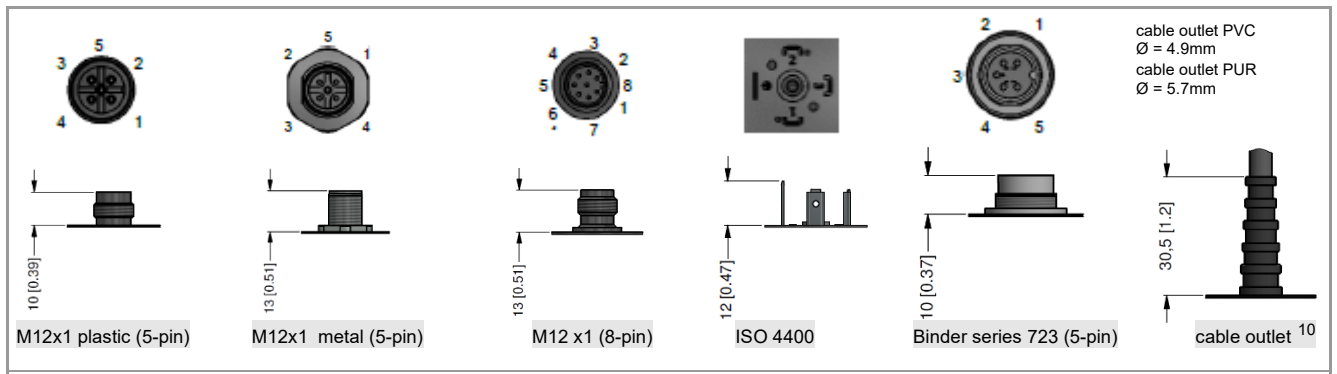
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	cable colours (DIN 47100)
Supply +	1	1	1	1	1	wh (white)
Supply -	3	3	3	2	3	bn (brown)
Signal + (only 3-wire)	2	2	2	3	2	gn (green)
Contact 1	4	4	4	3	4	gy (grey)
Contact 2	5	5	5	-	5	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)

Electrical connections (dimensions in mm)

DS 200P

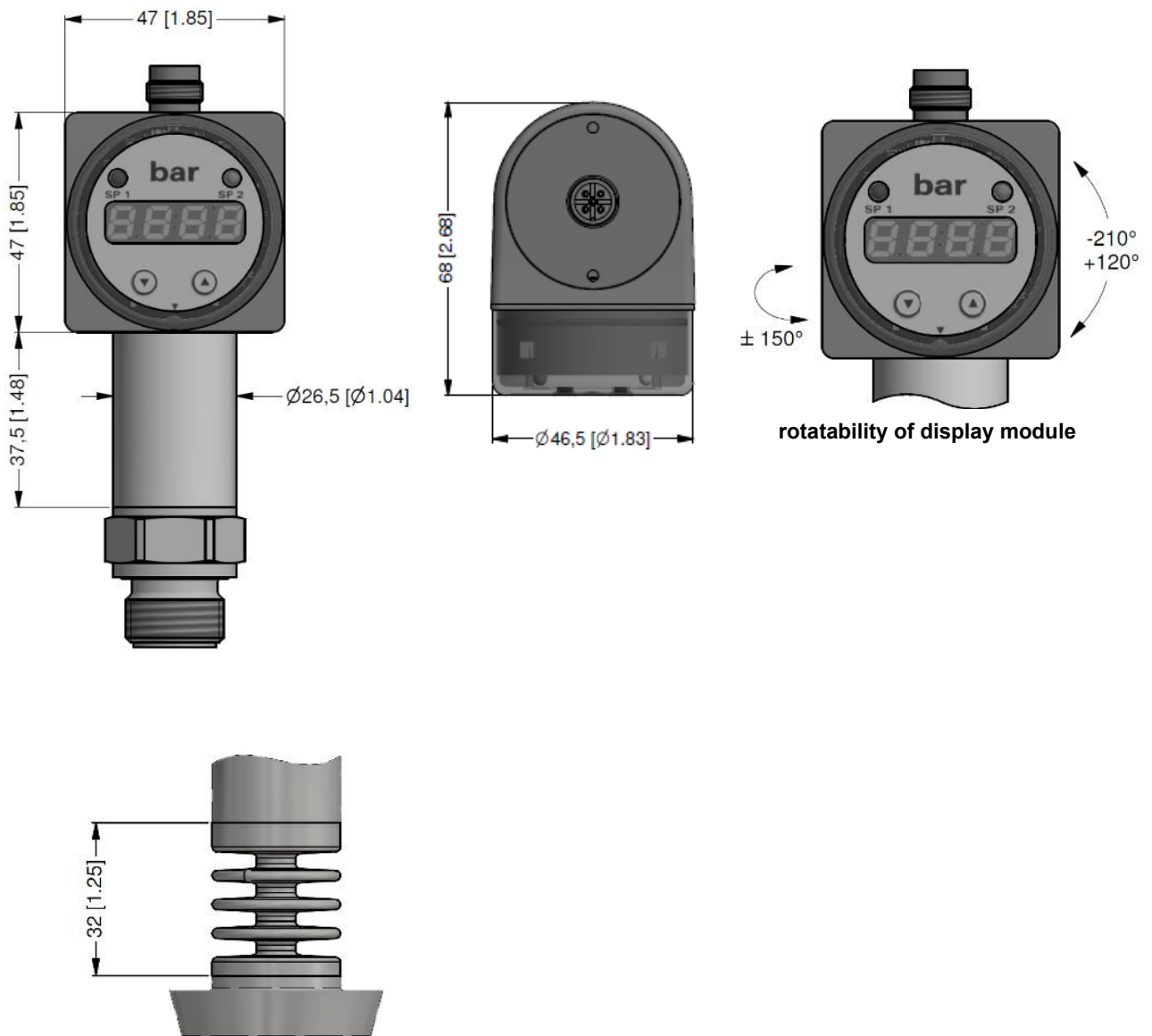
Electronic Pressure Switch

Technical Data



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

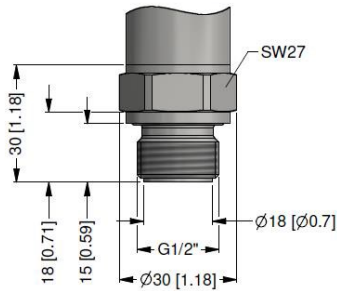
Mechanical connections (dimensions in mm)

DS 200P

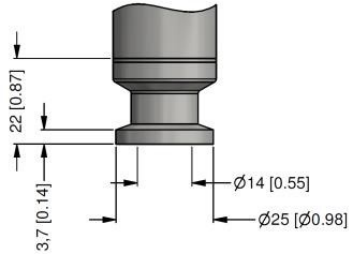
Electronic Pressure Switch

Technical Data

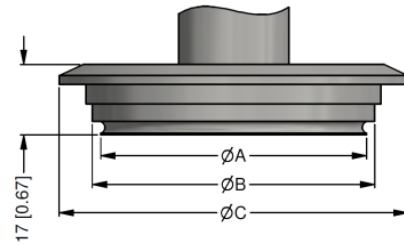
dimensions in mm [in]	
size	DN 40/50
A	64 [2.52]
B	68 [2.68]
C	84 [3.31]



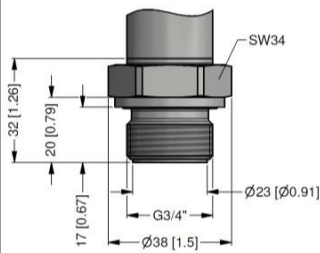
G1/2" flush
($P_N \geq 1$ bar)



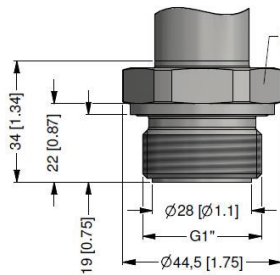
Clamp 3/4" (DIN 32676)
4 bar $\leq p_N \leq$ 8 bar



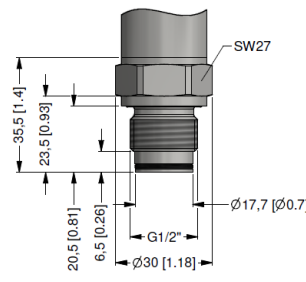
Varivent © $P_N \leq 25$ bar



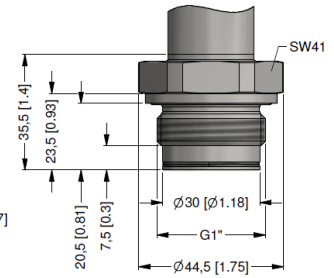
G3/4" flush



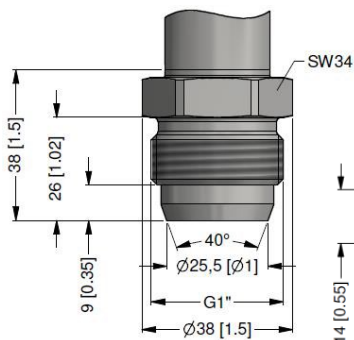
G1" flush



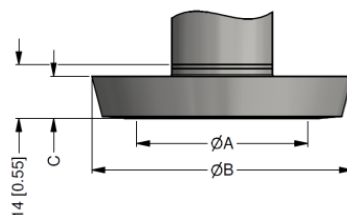
G1/2" flush with
radial o-ring



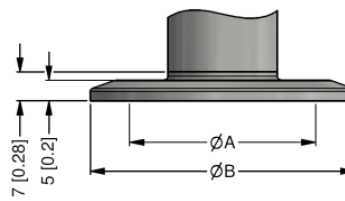
G1" flush with
radial o-ring ($P_N > 0,25$ bar)



G1" cone



dairy pipe (DIN 11851)



clamp (DIN 32676)

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

15.01.2024

DS 200P

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

3.1 prot.

Settings in temperature different from basic 20 °C (+/- 10 °C, max. 70 bar and 200 °C)

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.



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