



# **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 others on request

## Special characteristics

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

# **Optional versions**

**IS-version** 

Ex ia = intrinsically safe for gases and dusts

customer specific versions

# **DS 400P**

# Intelligent Electronic **Pressure Switch** Stainless Steel

Pressure Ports and Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770: standard: 0.35 % FSO option: 0.25 % FSO

The electronic pressure switch DS 400P is the successful combination of

- intelligent pressure switch
- digital display

and has been developed for process industry; especially for food industry and pharmacy.

As standard the DS 400P offers a PNP contact and a rotable display module with 4-digit LED display.

Optional versions like e.g. an intrinsically safe version, max. two contacts and an analogue output complete the profile.

#### Preferred areas of use are



Food industry



Pharmacy

## Material and test certificates

- Inspection certificate 3.1 according to EN 10204
- Test report 2.2 according to EN 10204





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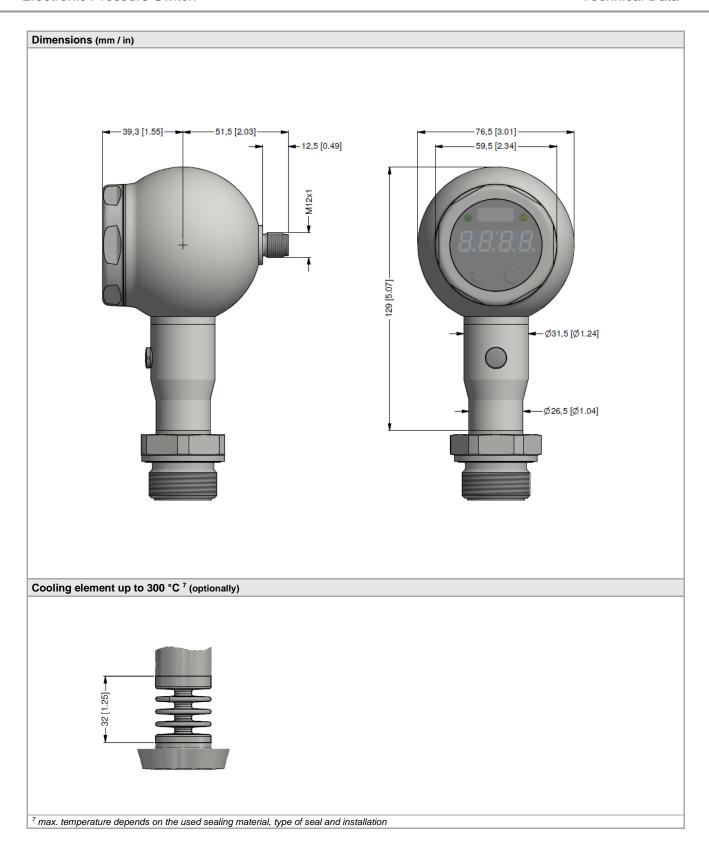


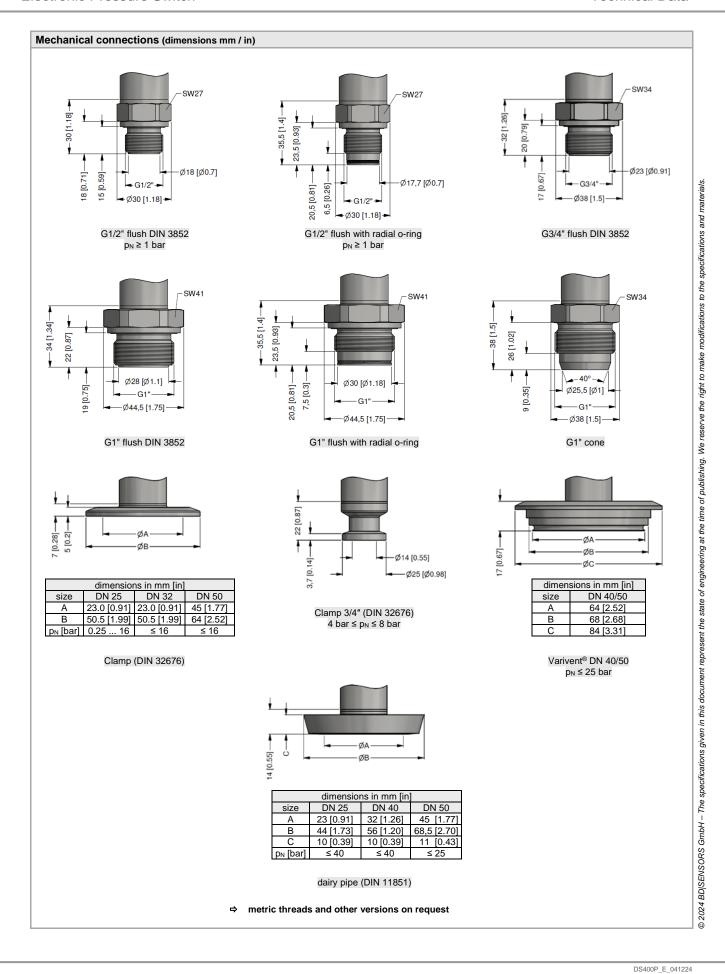
Electronic Pressure Switch

Input pressure range 1																
Nominal pressure gauge	[bar]	-1 0	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40
Nominal pressure absolute	[bar]	0	-	-	-	0.4	0.6	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	[bai]	$p_N \ge 1 ba$	- 1					7.5	10			bar: on			120	210
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· · · · · · · · · · · · · · · · · · ·	C OI III	ng ana cian	про													
Contact <sup>2</sup>																
Number, type	standard: 1 PNP contact option: 2 independent PNP contacts															
Max. switching current	contact															
Accuracy of contacts 3		standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO / nominal pressure						pressu	re ≥ 0.	4 bar:	$\leq \pm 0.3$	5 % FS				
B		option: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO														
Repeatability		≤±0.1 % FSO														
Switching frequency		2-wire: max. 10 Hz / 3-wire: 50 Hz														
Switching cycles		> 100 x														
Delay time		0 100	sec													
with IS-protection max. 1 conta																
Analogue output (optionall	y) / Su															
2-wire current signal		4 20 r					\	00.41.6							4.	_
		permissi					<sub>nin</sub> ) / 0.0	)2 A] (	2				respo	onse tir	ne: < 10	J msec
2-wire current signal with		4 20 r					) / 0	72 41 6	`				rece	noo #	no 44	) ma
IS-protection		permissi 4 20 r								n of a-	on 4.5	. \ 4	respo	inse tir	ne: < 10	J msec
3-wire current signal							aujusta	oie (tul	11-dow	n or sp	an 1:5	9)	reena	nee tir	no 21	) mean
Without analogue output		permissi V <sub>S</sub> = 15			x = 500	, 52							respo	nise iii	ne: < 30	J IIISEC
Without analogue output  Accuracy <sup>3</sup>		$v_s = 15$			Accura	- O 1	har <	+059	% ESC	) / nor	minal r	recur	ر ۱۸ < م	l har	< + 0.35	5 % EC
Accuracy		option:					bar: ≤				ııııaı þ	n essui	C 2 0.4	t Dai.	≥ ± 0.50	7013
<sup>3</sup> accuracy according to IEC 6077	70 – lim															
<sup>4</sup> with turn-down of span the anal																
Thermal errors (offset and s	pan) <sup>5</sup>															
Nominal pressure p <sub>N</sub>	[bar]		-1	0				<	0.40					≥ 0.4	10	
	FSO1			0.75					± 1.5					≤ ± 0.		
In compensated range	[°C]			85					50					-20		
<sup>5</sup> an optional cooling element can		ce thermal			et and s	nan dei	nondina			nosition	and fil	lling con	ditions			
								Ullillia								
	minacii	oo trommar	CHOOLS I			parrac	oenang	OHIIISU	anauon	positioi	r arra m	ning con	iditions			
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Permissible temperatures Filling fluid Medium <sup>6</sup>			overpre	s -40 essure	ilicone ) 12: : -40	oil 5°C	) °C	OH HISE	anation			food ( -10	compa ) 12 e: -10	5 °C	o °C	
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Permissible temperatures Filling fluid Medium <sup>6</sup> Medium with cooling element Electronics / environment Storage <sup>6</sup> max. temperature of the mediun <sup>7</sup> max. temperature depends on the also for pabs ≤ 1 bar Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Filling fluids Standard Optional Materials Pressure port Diaphragm Housing / cap	t <sup>7</sup> m for ov the used	permanen no dama emission  20 g RM 10 g RM 500 g / 1  silicone food con (Mobil S  inch three G1" con stainless stainless standard	overprevacuum  > 0 bar. aterial, t  ent age, bu and ir and ir as / 10 and ir as /	si -40 essure n: : 150 °C yype of : 200 half si e oil ac ous 32 np, dia 1.4435 1.4301 ty glas	ilicone  1 129  140  2. for 60  3. seal and  4. seal and  4. seal and  5. seal and  6. seal and  6. seal and  6. seal and  7. seal and  8. seal and  8. seal and  9. seal and  1. s	oil 5 °C 300 150 minuted install ction ording to	o °C s o °C s with a lation to EN 6	-40 -40 -40 max. e	accord accord accord accord accord	ing to I ing to I tration	overpi vacuu empera DIN EN DIN EN No.: 1	food (1-10) ressure m:  ture of 5  N 6006 N	compa ) 12 e: -10 -10 50 °C	5 °C ) 250 ) 150 with co	ooling e	uest
Permissible temperatures Filling fluid Medium <sup>6</sup> Medium with cooling element Electronics / environment Storage <sup>6</sup> max. temperature of the mediun <sup>7</sup> max. temperature depends on the Balso for pabs ≤ 1 bar Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Wechanical stability Vibration Shock Filling fluids Standard Optional Materials Pressure port Diaphragm Housing / cap Viewing glass	t <sup>7</sup> m for ov the used	permanen no dama emission  20 g RM 500 g / 1  silicone food con (Mobil S  inch thread of the constainless stainless laminate	overprevacuum  > 0 barraterial, ti ent age, bun and in IS / 10 IS / 10 Impatible HC Cib ead: e, Clan s steel d safet dt FKN FFK	si -40 essure n:  150 °C yype of  200 half si e oil ac ous 32 enp, dia 1.44351.4301 ey glas y gl	ilicone  1 129  140  2. for 60  3. seal and  4. ty according  4. ty according  5. (316L)  6. (316L)  6. (304)  8. frecom  7. recom	oil 5 °C 300 150 minute.d install ction ording to	s with a lation  to EN 6	-40 -40 -40 max. e	accord accord accord accord accord	ing to I ing to I tration	overpi vacuu empera DIN EN DIN EN No.: 1	food (1-10) ressure m:  ture of 5  N 6006 N	compa ) 12 e: -10 -10 50 °C	5 °C ) 250 ) 150 with co	O°C O°C 8	uest

<sup>10</sup> all designs in horizontal rotatable housing as standard

Explosion protection (only for 4 2	20 mA / 2-wire)								
Approval AX14-DS 400P	IBExU 06 ATEX 1050 X								
	zone 0: II 1G Ex ia IIC T4 Ga								
	zone 20: II 1D Ex ia IIIC T135 °C Da								
Safety technical maximum 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 μH							
Max. switching current <sup>9</sup>	70 mA								
Permissible temperatures for	in zone 0: -20 60 °C with p <sub>atm</sub> 0.8 ba	r up to 1.1 bar							
environment	in zone 1 or higher: -25 70 °C								
<sup>9</sup> the real switching current in the applicat	ion depends on the power supply unit								
Miscellaneous									
EHEDG certificate	EHEDG conformity is only ensured in combinatio								
Type EL Class I	- Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V Varivent® (P41): EPDM-O-ring which is FDA-listed								
Display	<ul> <li>- dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann Gm</li> <li>4-digit, 7-segment-LED display, visible range 37.2 x 11 mm; digit height 10 mm, range of indication -1999 +9999; accuracy 0.1% ± 1 digit;</li> </ul>								
	digital damping 0.3 30 sec (programmable); measured value update 0.0 10 sec (programmable)	nable)							
Current consumption	2-wire signal output current: max. 25 mA	along all assessment							
(without contacts)	3-wire signal output current: approx. 30 mA +	signal current							
Ingress protection	IP 67								
Installation position	any (standard calibration in a vertical position with								
Surface roughness	differing installation position for $p_N \le 4$ bar have to be specified in the order)  pressure port $R_a < 0.8  \mu m$ (media wetted parts)  diaphragm $R_a < 0.15  \mu m$ weld seam $R_a < 0.8  \mu m$								
Weight	min. 500 g (depending on mechanical connection	n)							
Operational life	100 million load cycles	7							
CE-conformity	EMC Directive: 2014/30/EU								
·									
ATEX Directive Wiring diagrams	2014/34/EU								
supply – A RL Contact 1 contact 2	Vs o – signal + contact 1 contact 2	A RL							
Pin configuration	·								
Electrical connection	M12x1 / metal (5-pin)	7: **- n							
	1								
Supply + Supply –	3								
Signal + (only 3-wire)	2	3							
Contact 1	4								
Contact 1	5	5							
Shield	plug housing / pressure port	4							
Designs 10	plug flousilig / plessure port								
Designs "									
	pplay	45° display (on request)							







	Ordering code DS 400P	
DS 400P		
Pressure gauge	7 A 5	
absolute <sup>1</sup> Input [bar]	7 A 5 7 A 6	
0.10 0.16	1 0 0 0 1 1 6 0 0	
0.25 0.40	1 6 0 0 0 2 5 0 0 4 0 0 0	
0.60 1.0	6 0 0 0 1	
1.6 2.5	1 6 0 1 2 5 0 1 4 0 0 1	
4.0 6.0	6 0 0 1	
10 16	1 0 0 2 1 6 0 2	
25 40	2 5 0 2 4 0 0 2	
-1 0 customer	1 0 0 2 1 6 0 2 2 5 0 2 4 0 0 2 X 1 0 2 9 9 9 9	consult
Design side display	K H K 4	
Analogue output 45° display		consult
without 4 20 mA / 2-wire	0	
4 20 mA / 3-wire, adjustable intrinsic safety 4 20 mA / 2-wire <sup>2</sup>		
Contact	9	consult
1 contact 2 contacts 2	1 2	
Accuracy standard for $p_N \ge 0.4$ bar: 0.35 % FSO	3	
standard for $p_N < 0.4$ bar: 0.50 % FSO option for $p_N \ge 0.4$ bar: 0.25 % FSO	5 2 9	
Electrical connection male plug M12x1 (5-pin) / metal		consult
customer Mechanical connection	N 1 1 1 9 9 9 9	consult
G1/2" with flush welded diaphragm (DIN 3852) <sup>3</sup>	Z 0 0	
G3/4" with flush welded diaphragm (DIN 3852)	z s 0	
G1" with flush welded diaphragm (DIN 3852)	z s 1	
G1" DIN 3852 with rad. o-ring and flush diaphragm	z s 7	
G1/2" DIN 3852 with rad. o-ring and flush diaphragm <sup>3</sup>	Z 6 1	
G 1" cone Clamp DN 25 (DIN 32676) / 3A <sup>2</sup>	K S 1	
Clamp DN 32 (DIN 32676) / 3A <sup>2</sup> Clamp DN 50 (DIN 32676) / 3A <sup>2</sup>	C 6 1 C 6 2 C 6 3 C 6 9 M 7 3	
Clamp 3/4" (DIN 32676) / 3A <sup>2</sup> dairy pipe DN 25 (DIN 11851) <sup>2</sup>	C 6 9 N 7 3	
dairy pipe DN 40 (DIN 11851) dairy pipe DN 50 (DIN 11851) dairy pipe DN 50 (DIN 11851)	M 7 5	
Varivent® DN 40/50 / 3A <sup>4</sup> customer	5 M 7 6 P 4 1 9 9 9	ganguit
Diaphragm stainless steel 1.4435 (316L)	9 9 9	consult
customer Seals	9	consult
for clamp, dairy pipe, Varivent <sup>®</sup> : none for inch thread: FKM	0	
FFKM customer	7 9	consult consult
Filling fluids silicone oil	1	Consuit
food compatible oil (FDA) / 3A customer	2 9	consult
Special version standard		0
with cooling element up to 300°C / 3A customer	2   0	consult  consult  consult  consult  consult  consult  0 0 0 9 consult
	3 0	5554.1
absolute pressure possible from 1 bar with IS version max. 1 contact is possible		
only possible for nominal pressure ranges $p_N \ge 1$ bar possible nominal pressure ranges according to data sh		
The cup nut for dairy pipe has to be mounted by produ Varivent <sup>®</sup> is a brand name of GEA Tuchenhagen Gmb	ction of pressure transmitter. The cup nut has to be ordered as separate position. I	
		01.04.2022

<sup>&</sup>lt;sup>1</sup> absolute pressure possible from 1 bar

with IS version max. 1 contact is possible
 only possible for nominal pressure ranges p<sub>N</sub> ≥ 1 bar

 <sup>4</sup> possible nominal pressure ranges according to data sheet
 5 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.
 Varivent<sup>®</sup> is a brand name of GEA Tuchenhagen GmbH