



DS 400P

Intelligent Electronic Pressure Switch Stainless Steel

Pressure Ports and Process Connections with Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 61298-2:
standard: 0.35 % FSO
option: 0.25 % FSO

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
- ▶ rotatable 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

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 rotatable 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



DS 400P

Electronic Pressure Switch

Technical Data

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]	-	-	-	-	0.4	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		p _N ≥ 1 bar: unlimited vacuum resistance p _N < 1 bar: on request														
¹ consider the pressure resistance of fitting and clamps																
Contact ²																
Number, type		standard: 1 PNP contact														

Explosion protection (only for 4 ... 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	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$
Max. switching current ⁹	70 mA
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -25 ... 70 °C

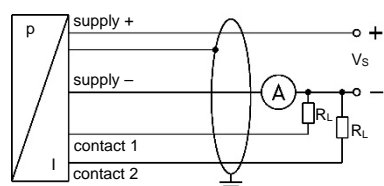
⁹ the real switching current in the application depends on the power supply unit

Miscellaneous

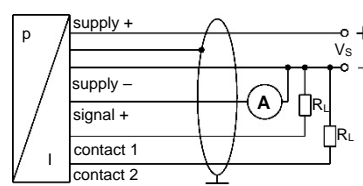
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent® (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH
Display	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; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)
Current consumption (without contacts)	2-wire signal output current: max. 25 mA 3-wire signal output current: approx. 30 mA + signal current
Ingress protection	IP 67
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $p_N \leq 4 \text{ bar}$ 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	min. 500 g (depending on mechanical connection)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagrams

2-wire-system (current)



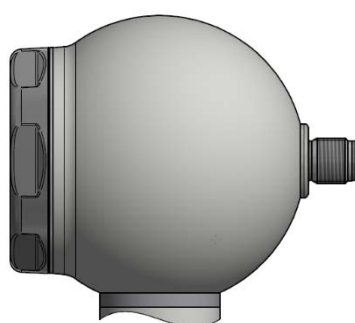
3-wire-system (current)



Pin configuration

Electrical connection	M12x1 / metal (5-pin)	
Supply +	1	
Supply -	3	
Signal + (only 3-wire)	2	
Contact 1	4	
Contact 2	5	
Shield	plug housing / pressure port	

Designs ¹⁰



side display



45° display (on request)

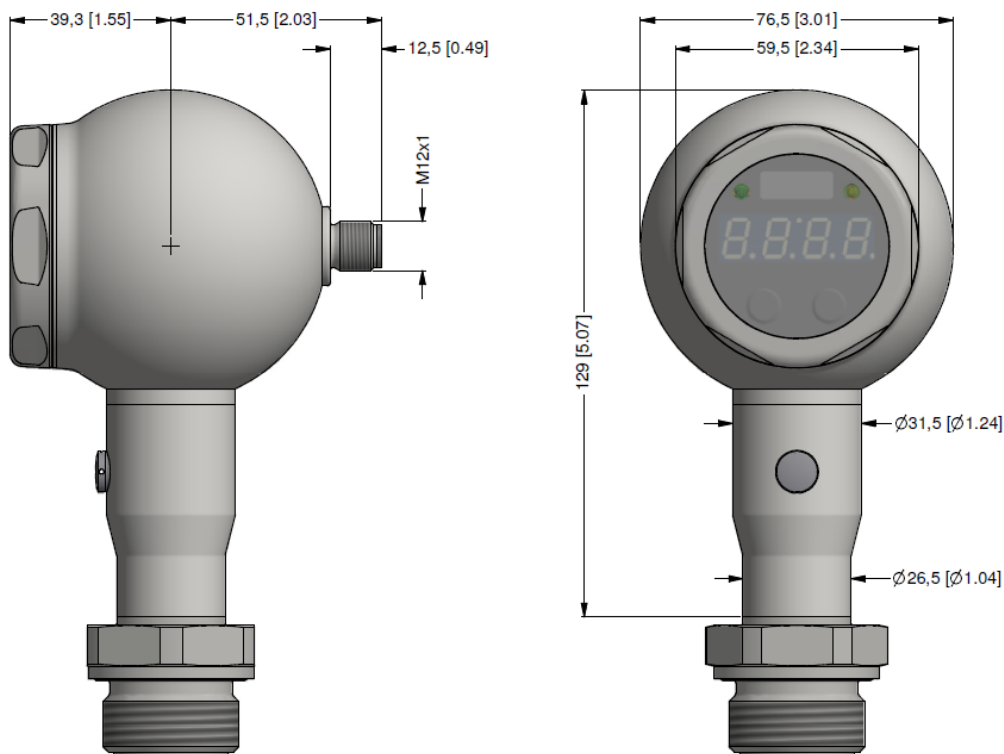
¹⁰ all designs in horizontal rotatable housing as standard

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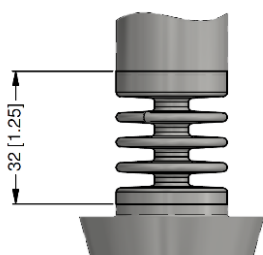
Electronic Pressure Switch

Technical Data

Dimensions (mm / in)

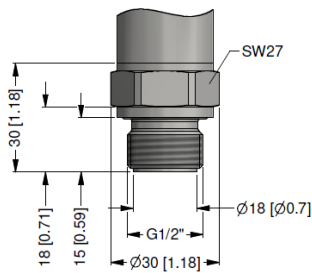


Cooling element up to 300 °C ⁷ (optionally)

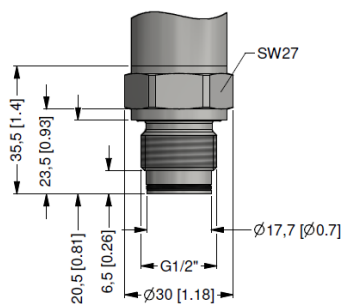


⁷ max. temperature depends on the used sealing material, type of seal and installation

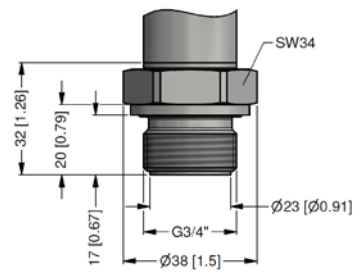
Mechanical connections (dimensions mm / in)



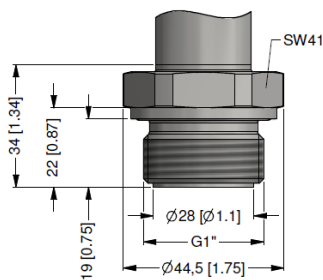
G1/2" flush DIN 3852
 $p_N \geq 1$ bar



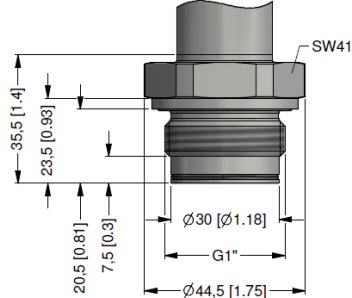
G1/2" flush with radial o-ring
 $p_N \geq 1$ bar



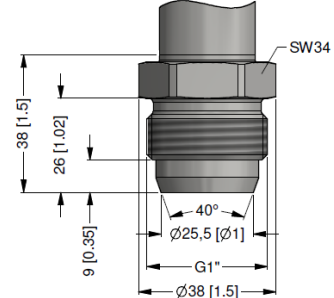
G3/4" flush DIN 3852



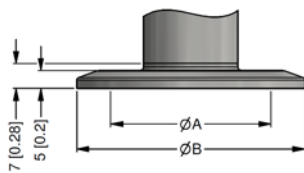
G1" flush DIN 3852



G1" flush with radial o-ring

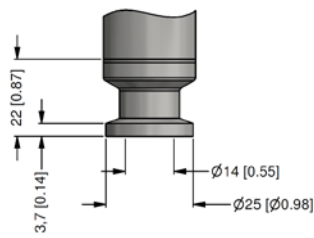


G1" cone

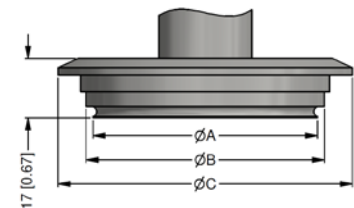


	dimensions in mm [in]		
size	DN 25	DN 32	DN 50
A	23.0 [0.91]	23.0 [0.91]	45 [1.77]
B	50.5 [1.99]	50.5 [1.99]	64 [2.52]
p_N [bar]	0.25 ... 16	≤ 16	≤ 16

Clamp (DIN 32676)

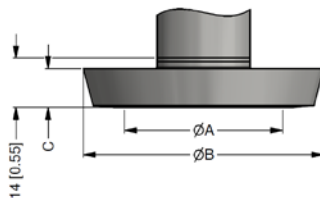


Clamp 3/4" (DIN 32676)
 $4 \text{ bar} \leq p_N \leq 8 \text{ bar}$



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

Varivent® DN 40/50
 $p_N \leq 25$ bar



	dimensions in mm [in]		
size	DN 25	DN 40	DN 50
A	23 [0.91]	32 [1.26]	45 [1.77]
B	44 [1.73]	56 [2.20]	68.5 [2.70]
C	10 [0.39]	10 [0.39]	11 [0.43]
p_N [bar]	≤ 40	≤ 40	≤ 25

dairy pipe (DIN 11851)

⇒ metric threads and other versions on request

Ordering code DS 400P

DS 400P

□	□	-	□	□	□	-	□	-	□	-	□	-	□	□	-	□	□	-	□	□	-	□	□
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Pressure					
	7 A 5				
	7 A 6				
Input	[bar]				
	0.10	1 0 0 0			
	0.16	1 6 0 0			
	0.25	2 5 0 0			
	0.40	4 0 0 0			
	0.60	6 0 0 0			
	1.0	1 0 0 1			
	1.6	1 6 0 1			
	2.5	2 5 0 1			
	4.0	4 0 0 1			
	6.0	6 0 0 1			
	10	1 0 0 2			
	16	1 6 0 2			
	25	2 5 0 2			
	40	4 0 0 2			
	-1 ... 0	X 1 0 2			
	customer	9 9 9 9			
Design					
	side display	K H			
	45° display	K 4			
Analogue output					
	without		0		
	4 ... 20 mA / 2-wire		1		
	4 ... 20 mA / 3-wire, adjustable		7J		
	intrinsic safety 4 ... 20 mA / 2-wire ²		E		
	customer		9		
Contact					
	1 contact		1		
	2 contacts ²		2		
Accuracy					
	standard for p _N ≥ 0,4 bar:	0.35 % FSO	3		
	standard for p _N < 0,4 bar:	0.50 % FSO	5		
	option for p _N ≥ 0,4 bar:	0.25 % FSO	2		
	customer		9		
Electrical connection					
	male plug M12x1 (5-pin) / metal		N 1 1		
	customer		9 9 9		
Mechanical connection					
	G1/2" with flush welded diaphragm (DIN 3852) ³		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 ³		Z 6 1		
	G 1" cone		K S 1		
	Clamp DN 25 (DIN 32676) / 3A ⁴		C 6 1		
	Clamp DN 32 (DIN 32676) / 3A ⁴		C 6 2		
	Clamp DN 50 (DIN 32676) / 3A ⁴		C 6 3		
	Clamp 3/4" (DIN 32676) / 3A ⁴		C 6 9		
	dairy pipe DN 25 (DIN 11851) ^{4,5}		M 7 3		
	dairy pipe DN 40 (DIN 11851) ^{4,5}		M 7 5		
	dairy pipe DN 50 (DIN 11851) ^{4,5}		M 7 6		
	Varivent® DN 40/50 / 3A ⁴		P 4 1		
	customer		9 9 9		
Diaphragm					
	stainless steel 1.4435 (316L)		1		
	customer		9		
Seals					
	for clamp, dairy pipe, Varivent®:	none	0		
	for inch thread:	FKM	1		
		FFKM	7		
	customer		9		
Filling fluids					
	silicone oil		1		
	food compatible oil (FDA) / 3A		2		
	customer		9		
Special version					
	standard		0 0 0		
	with cooling element up to 300°C / 3A		2 0 0		
	customer		9 9 9		

¹ absolute pressure possible from 1 bar

² with IS version max. 1 contact is possible

³ only possible for nominal pressure ranges $p_N \geq 1$ bar

⁴ 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® is a brand name of GEA Tuchenhausen GmbH