



DS 400

Intelligent Electronic Pressure Switch Stainless Steel

Stainless Steel Sensor

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

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Contacts

1 or 2 independent PNP contacts, freely configurable

Analogue output

2-wire: 4 ... 20 mA 3-wire: 4 ... 20 mA

3-wire: 0 ... 10 V (on request)

others on request

Special characteristics

- indication of measured values on a 4-digit LED display
- rotatable and configurable display module

Optional versions

IS-version Ex ia = intrinsically safe for gases and dust

- welded pressure sensor
- customer specific versions

The electronic pressure switch DS 400 is the successful combination of

- intelligent pressure switch
- digital display

and has been specially designed for numerous applications in various industrial sectors.

As standard the DS 400 offers a PNP contact and a display module, which is mounted rotable in the globe housing. Additional optional versions like e.g. an intrinsically safe version, a second contact and an analogue output complete the profile.

Preferred areas of use are



Plant and machine engineering



Heating and air conditioning



Environmental engineering (water - sewage - recycling)



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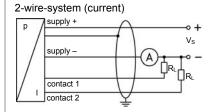
Input pressure range													
Nominal pressure gauge	[bar]	-1 0	0.10	0.16	0.25	0.40	0.60)	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60)	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5		5	10	10	20	40
Burst pressure	[bar]	7.5	1.5	1.5	1.5	3	7.5	7	7.5	15	15	25	50
Nominal pressure				1 .									
gauge / abs.	[bar]	10	16	25	40	60)	100	1	60	250	400	600
Overpressure	[bar]	40	80	80	105	21	0	210	6	600	1000	1000	1000
Burst pressure	[bar]	50	120	120	210	42	0	420	10	000	1250	1250	1250
Vacuum resistance		p _N ≥ 1 ba	r: unlimit	ed vacuui	n resista	nce			p _N <	1 bar: c	n reques	st	
Contact ¹													
			. 4 DND			. 0 :		L DNID	4	.4.			
Number, type		standard				: 2 indep					t- \ /	\/ 0\	,
Max. switching current		4 20 m		ıa 3-wire: (on reque							nt; v _{switch} cuit resist	$_{1} = V_{S} - 2V_{S}$	/
Accuracy of contacts ²		≤ ± 0.25		(On reque	-Sι).	COITE	ici raili	ig 123	IIIA, S	oriorit-circ	Juit 16313	lanı	
Repeatability		≤±0.23											
Switching frequency		2-wire: m		7 /	3-wire	: 50 Hz							
Switching cycles		> 100 x 1			J-WIIC	. 50 112							
Delay time		0 100											
¹ with IS-protection max. 1 conta	ct possi												
Analogue output (optionall													
2-wire current signal	,,. . u		1A / V ₂ =	13 36	Vnc								
=o odironi digilal		permissil) / 0.02 A	JΩ			respon	se time:	< 10 mse	С
2-wire current signal with		4 20 m				, . 5.52 / .	,			. Copoi		. 5 11100	-
IS-protection 3-wire current signal				$R_{\text{max}} = [(V_{\text{max}})^T]$) / 0.02 A	Ω			respon	se time:	< 10 mse	С
		4 20 m	nA / V _s =	24 V _{DC} ±	10 % ad			own of	span				
		permissil	ble load:	$R_{max} = 50$	0 Ω					respon	se time:	< 30 mse	С
3-wire voltage signal		0 10 \	/ / V _S = 2	24 V _{DC} ± 1	Ι0 % adju	ıstable (tı	ırn-dov	vn of s	pan 1:	5) ³			
(on request)		permissil	ble load:	$R_{min} = 10$	kΩ					respor	se time:	< 30 mse	С
Without analogue output		$V_{\rm S} = 15$.											
Accuracy ²		standard											
				al pressui									
² accuracy according to IEC 6077	70 lina	option:		al pressui				FS0					
³ with turn-down of span the anal													
Thermal effects (Offset and				,									
· · · · · ·	•		-1	0			< 0.4	0				≥ 0.40	
Nominal pressure p _N	[bar]		-1 ≤ ± 0.				< 0.4 ≤ ± ′					≥ 0.40 ≤ ± 0.75	
Nominal pressure p _N	•		-1 ≤ ± 0. -20	75				1			<u> </u>	≥ 0.40 ≤ ± 0.75 20 85	
Nominal pressure p _N Tolerance band [% in compensated range	[bar] FSO]		≤ ± 0.	75			≤ ± ′	1			<u> </u>	± 0.75	
Nominal pressure p _N Tolerance band [% in compensated range Permissible temperatures	[bar] FSO]	medium:	≤ ± 0. -20	75 85	electro	nics / env	≤±′ 07	0	8	5 °C	<u>≤</u> -2	± 0.75 20 85	100 °C
Nominal pressure p _N Tolerance band [% in compensated range Permissible temperatures Permissible temperatures	[bar] FSO]	medium:	≤ ± 0. -20	75 85	electro	nics / env	≤±′ 07	0	8	5 °C	<u>≤</u> -2	± 0.75	100 °C
Nominal pressure p _N Tolerance band [% in compensated range Permissible temperatures Permissible temperatures Electrical protection	[bar] FSO]		≤±0. -20 -40 12	75 85	electro	nics / env	≤±′ 07	0	8	5 °C	<u>≤</u> -2	± 0.75 20 85	100 °C
Nominal pressure p _N Tolerance band [% in compensated range Permissible temperatures Permissible temperatures Electrical protection Short-circuit protection	[bar] FSO]	permane	≤±0. -20 -40 12	75 85 25 °C		nics / env	≤±′ 07	0	8	5 °C	<u>≤</u> -2	± 0.75 20 85	100 °C
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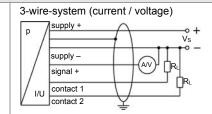
Electronic Pressure Switch

Miscellaneous	
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 3-wire signal output voltage: approx. 30 mA
Ingress protection	IP 67
Installation position	any 6
Weight	approx. 400 g
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁷
ATEX Directive	2014/34/EU

 ⁶ Pressure switches are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges p_N ≤ 1 bar.
 ⁷ This directive is only valid for devices with maximum permissible overpressure > 200 bar.

Wiring diagrams





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

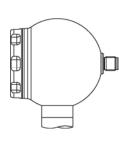
Electrical connection (dimensions in mm)

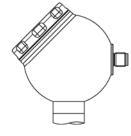




M12x1 (5-pin)

Designs 8





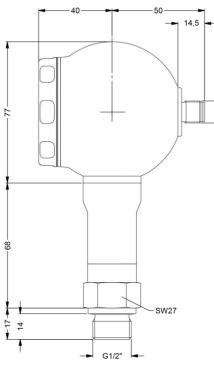
45° display (on request) side display

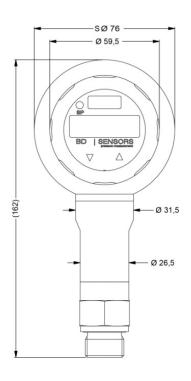
⁸ all designs in horizontal rotatable housing as standard

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Mechanical connections (dimensions in mm)

standard

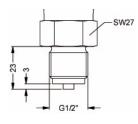




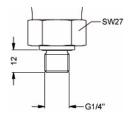
G1/2" DIN 3852

⇒ for nominal pressure p_N > 400 bar increases the length of devices without IS-version by 19 mm and of devices with IS-version by 39 mm

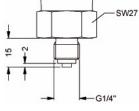
options



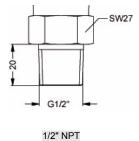
G1/2" EN 837



G1/4" DIN 3852

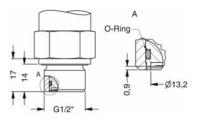


G1/4" EN 837



SW27

1/4" NPT



G1/2" flush DIN 3852 (p_N from 0.1 up to 40 bar)

⇒ metric threads and other versions on request

BD SENSORS
pressure measurement

Tel.: +49 (0) 92 35 / 98 11- 0 Fax: +49 (0) 92 35 / 98 11- 11



Ordering code DS 400 **DS 400** Pressure A 0 A 1 gauge absolute 2 Input [bar] 0 0 0 0.10 1 0 0 0 0.16 6 5 0 0.25 0 0 4 0.40 0 0 0 0 0 0 0 0 1 6 0 1 5 0 1 0.60 6 1.0 6 5 0 0 6 5 0 1.6 2 25 0 1 0 1 0 2 4 4.0 6 6.0 10 0 2 16 0 2 0 2 0 2 25 4 40 specifications and r 60 6 100 0 0 3 6 0 3 5 0 3 0 0 3 160 250 2 400 4 600 6 0 1 9 0 3 modifications to the 0 2 9 -1 ... 0 2 customer consult stainless steel globe housing КН (side display) stainless steel globe housing K consult right to make (45° display) Analogue output without 0 4 ... 20 mA / 2-wire We reserve the 0 ... 10 V / 3-wire, adjustable 3J consult 4 ... 20 mA / 3-wire, adjustable 7J intrinsic safety 4 ... 20 mA / 2-wire ³ Ε customer 9 consult Contact time of publishing. 1 contact 2 contacts 3 standard for p_N ≥ 0.4 bar 0.35 % 3 5 standard for p_N< 0.4 bar 0.5 % the state of engineering at the option for $p_N \ge 0.4$ bar 0.25 % 2 9 customer consult Electrical connection male plug M12x1 (5-pin) / N 1 1 metal version 9 9 9 customer consult Mechanical connection G1/2" DIN 3852 1 0 0 G1/2" EN 837 0 0 2 BD|SENSORS GmbH - The specifications given in this document represent G1/4" DIN 3852 3 0 0 G1/4" EN 837 0 0 4 G1/2" DIN 3852 with F 0 0 flush sensor ⁴ 1/2" NPT N 0 0 N 4 0 9 9 9 1/4" NPT customer consult FKM without (welded version) consult customer 9 consult Special version 0 0 0 9 9 9 standard customer consult

01.04.2020

¹ from 60 bar: measurement starts with ambient pressure

² absolute pressure possible from 0.4 bar

³ with IS version max. 1 contact is possible

 $^{^4\,}$ only possible for nominal pressure ranges $p_N \le 40\,$ bar

 $^{^{5}}$ welded version only with pressure ports according to EN 837; possible for nominal pressure ranges $p_{N} \le 40$ bar