



DS 200

Electronic Pressure Switch

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, 2 or 4 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

Optional versions

- **IS-version** Ex ia = intrinsically safe for gases
- pressure sensor welded
- customer specific versions

The electronic pressure switch DS 200 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 200 offers a PNP contact and a rotatable display module with 4-digit LED display. Optional versions like e.g. an intrinsically safe version, max. four contacts and an analogue output complete the profile.

Preferred areas of use are



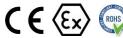
Plant and machine engineering



Heating and air conditioning



Environmental engineering (water - sewage - recycling)



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Input pressure range

Electronic Pressure Switch

Input pressure range											
Nominal pressure gauge ¹ [bar]	-10	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute [bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Level gauge ¹ [mH₂O]	-	1	1.6	2.5	4	6	10	16	25	40	60
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	7.5	15	15	25	50
Nominal pressure gauge ¹ / abs. [bar]	10	16	25	40	60) 1	00	160	250	400	600
Level gauge ¹ [mH ₂ O]	100	160	250	400	60	0	-	-	-	-	-
Overpressure [bar]	40	80	80	105	21	0 2	10	600	1000	1000	1000
Burst pressure ≥ [bar]	50	120	120	210	42	0 4	20	1000	1250	1250	1250
Vacuum resistance	p _N ≥ 1 ba	ar: unlimit	ed vacuun	n resistan	ce; p _N < '	1 bar: on	request				
¹ from 60 bar: measurement starts with	ambient pre	essure									
Contact ²											
Standard	1 PNP c	ontact									
Options		2 independent PNP contacts 4 independent PNP contacts (possible with M12x1, 8-pin for 4 20 mA/3-wire; 0 10 V/3-wire on request)									
Max. switching current	1	nA / 2- an / / 3-wire:		conta	ct rating	125 mA, s	short-cir	cuit resist		= V _S - 2V	
Accuracy of contacts 3	standard option:	l: p _N <	0.4 bar: : 0.4 bar: :	≤ ± 0.5 %	FSO			≤ ± 0.35		_	
Repeatability	≤ ± 0.1 %	% FSO									
Switching frequency	max. 10										
Switching cycles	> 100 x	10 ⁶									
Delay time	0 100										
² max. 1 contact for 2-wire current signs no contact possible with 3-wire in com				wire curre	nt signal w	ith IS-prote	ection				
Analogue output (optionally) / Se	upply										
2-wire current signal		nA / V _S = ² e time: < ²	13 36 V 10 msec	DC P	ermissible	e load: R _r	nax = [(V	$S - V_{S min}$	/ 0.02 A] <u>c</u>	2	
2-wire current signal with	4 20 n	nA / V _S =	15 28 V	oc p	ermissible	e load: R	nax = [(V	$S - V_{S min}$	/ 0.02 A] <u>c</u>	2	
IS-protection	response time: < 10 msec										
3-wire current signal	permissi	ble load: I	19 30 V R _{max} = 500	Ω					respons	e time: < 3	sec
3-wire voltage signal			5 36 V _I	oc p	ermissible	e load: R	_{nin} = 10 l	Ω	respons	e time: < 3	msec
without analogue output		36 V _{DC}									
Accuracy ³	standard option:	. -!4	.4 bar: ≤ ± .4 bar: ≤ ±			$_{\rm N} \ge 0.4$ ba	ar: ≤ ± 0	.35 %FSC)		
 accuracy according to IEC 60770 – lir with turn-down of span the analogue s 	nit point adj	ustment (n	on-linearity,	hysteresis	s, repeatab	ility) ange					
Thermal effects (offset and span)										
Nominal pressure p_N [bar]		-1	0			< 0.40			1	≥ 0.40	
Tolerance band [% FSO]	≤ ± 0.75					≤ ± 1			≤ ± 0.75		
in compensated range [°C]									_	0.5	
		-20	85			0 70			-2	20 85	
Permissible temperatures		-20	85			0 70			-2	20 85	
Permissible temperatures Medium	-40 12		85			0 70			-2	20 85	
•	-40 12 -40 8	25 °C	85			0 70			-2	20 85	
Medium		25 °C 85 °C	85			0 70			-2	20 85	
Medium Electronics / environment	-40 8	25 °C 85 °C	85			0 70			-2	20 85	
Medium Electronics / environment Storage Electrical protection	-40 8	25 °C 35 °C 00 °C	85			0 70			-2	20 85	
Medium Electronics / environment Storage	-40 8 -40 10	25 °C 35 °C 00 °C	85 so no fund	ction		0 70			-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection	-40 8 -40 10 permane no dama	25 °C 25 °C 30 °C ent ge, but al			EN 61326				-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection	-40 8 -40 10 permane no dama	25 °C 25 °C 30 °C ent ge, but al	so no fund		EN 61326				-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility	-40 8 -40 10 permane no dama emission	25 °C 25 °C 30 °C ent ge, but al	so no fund unity acco	ording to I	EN 61326		J 60068-	2-6	-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability	-40 8 -40 10 permane no dama emission	25 °C 55 °C 90 °C ent ge, but all a and imm	so no fund unity acco	ording to I		o DIN EN			-2	0 85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration	permane no dama emission	25 °C 55 °C 90 °C ent ge, but all a and imm	so no fund unity acco	ording to I	ccording t	o DIN EN			-2	0 85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials	-40 8 -40 10 permane no dama emission 10 g RM 500 g / 1	25 °C 35 °C 30 °C ent ge, but al a and imm S (25 2	so no fund unity acco	ording to I ad	ccording t	o DIN EN			-2	0 85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials Pressure port	permane no dama emission 10 g RM 500 g / 1	ent and imm S (25 2 msec	so no func unity acco	ac	ccording t	o DIN EN			-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials Pressure port Housing	permane no dama emission 10 g RM 500 g / 1 stainless stainless	ent and imm S (25 2 msec	so no func unity acco 2000 Hz) 404 (316 404 (316	ac	ccording t	o DIN EN			-2	85	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials Pressure port Housing Display housing	permane no dama emission 10 g RM 500 g / 1 stainless stainless PA 6.6, p	ent ge, but al and imm S (25 2 msec steel 1.4 steel 1.4 polycarbo	so no func unity acco 2000 Hz) 404 (316 404 (316	acacacacacacacacacacacacacacacacacacac	ccording t	o DIN EN	1 60068				
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials Pressure port Housing Display housing Seals (media wetted)	permane no dama emission 10 g RM 500 g / 1 stainless stainless PA 6.6, g standard	ent ge, but al and imm S (25 2 msec steel 1.4 steel 1.4 polycarbo	so no func unity acco 2000 Hz) 404 (316) 404 (316) nate	arding to B	ccording t	o DIN EN	1 60068			n request	
Medium Electronics / environment Storage Electrical protection Short-circuit protection Reverse polarity protection Electromagnetic compatibility Mechanical stability Vibration Shock Materials Pressure port Housing Display housing	permane no dama emissior 10 g RM 500 g / 1 stainless PA 6.6, p standard stainless	ent ge, but al and imm S (25 2 msec steel 1.4 steel 1.4 colycarbo l: FKM steel 1.4	so no func unity acco 2000 Hz) 404 (316 404 (316	acacacacacacacacacacacacacacacacacacac	ccording t	o DIN EN	1 60068				

Electronic Pressure Switch

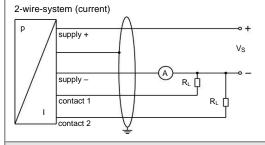
Explosion protection (only for 4 20 mA / 2-wire)				
Approval AX14-DS 200	IBExU 06 ATEX 1050 X			
	zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)			
Safety technical maximum values	$U_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H}$			
Max. switching current ⁶	70 mA			
Permissible temperatures for environment	-25 70 °C			
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m			
⁶ the real switching current in the application depends on the power supply unit				

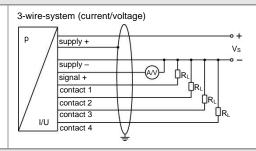
⁶ the real	switching (current in th	ie appli	cation d	depends	on the	power s	supply	unit
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Miscellaneous	
Display	4-digit, red 7-segment-LED display digit height 7 mm range of indication -1999 +9999 accuracy 0.1 % ± 1 digit digital digi
Current consumption (without contacts)	measured value update 0.0 10 sec (programmable) 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 ⁷
Weight	min. 160 g (depending on mechanical connection)
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁸
ATEX Directive	2014/34/EU

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.
 This directive is only valid for devices with maximum permissible overpressure > 200 bar

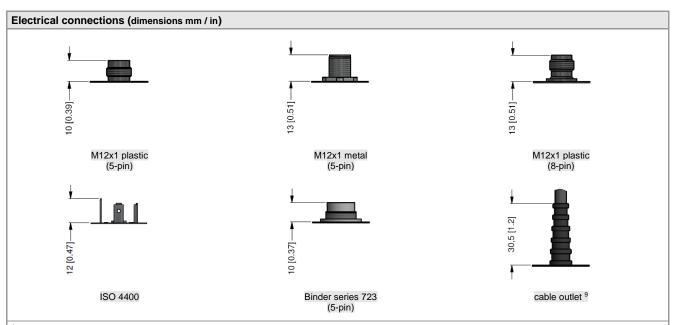
Wiring diagrams





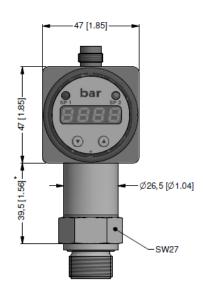
Pin configuration						
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	
	3 2 2	3 4	5 6 7		3 4 5	cable colours (IEC 60757)
Supply +	1	1	1	1	1	WH (white)
Supply –	3	3	3	2	3	BN (brown)
Signal + (only 3-wire)	2	2	2	3	2	GN (green)
Contact 1	4	4	4	3	4	GY (grey)
Contact 2	5	5	5	-	5	PK (pink)
Contact 3	-	-	6	-	-	-
Contact 4	-	-	7	-	-	-
Shield	via	plug housing/	via	ground	plug housing/	GNYE
Sillelu	pressure port	pressure port	pressure port	contact	pressure port	(green-yellow)

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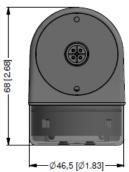
⁹ different cable types and lengths available; permissible temperature depends on kind of cable; standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

Dimensions (mm / in)



rotatability of display module



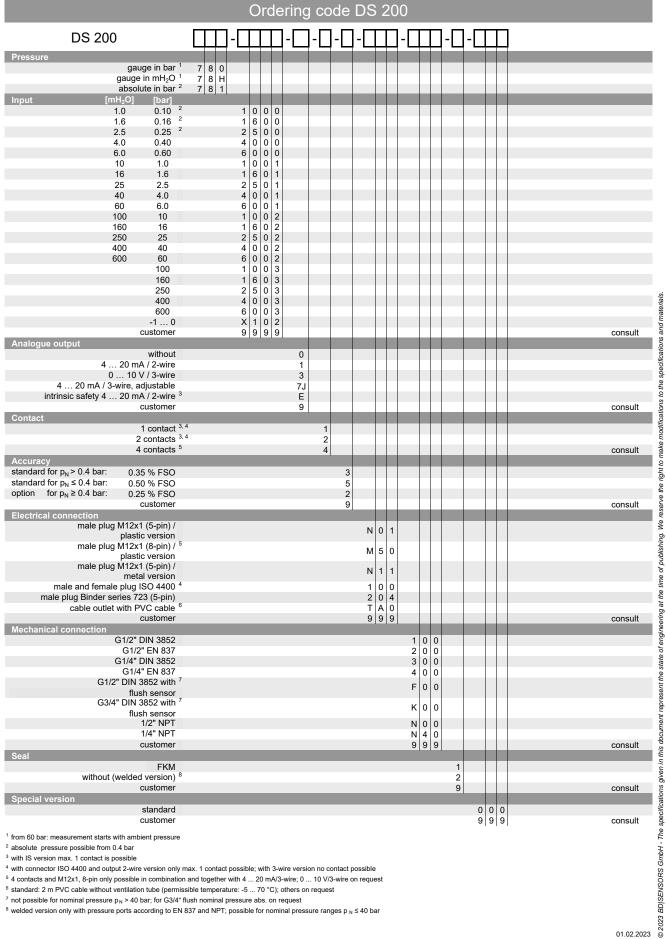


^{*} for nominal pressure p_N > 400 bar increases the length of device by 19 mm (without explosion protection) or by 39 mm (with explosion protection)

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Mechanical connection (dimensions mm / in) SW27 SW27 SW27 20 [0.79] 23 [0.91] 17 [0.67]— 14 [0.55] 3 [0.12]-G1/2" DIN 3852 G1/2" EN 837 1/2" NPT SW27 SW27 SW27 G1/4" 1/4" NPT 14 [0.55]-12 [0.47]-15 [0.59] 2 [0.08] G1/4" 14 [0.55]-G1/4" EN 837 G1/4" DIN 3852 1/4" NPT SW27 X(2:1) 19 [0.75] G3/4" -17 [0.67]— Ø13,2 [Ø0.52] 14 [0.55] 16 [0.63] 0,9 [0.04] Ø40 [Ø1.57]-G3/4" flush DIN 3852 (0.1 bar $\leq p_N \leq 40$ bar) G1/2" flush DIN 3852 (0.1 bar $\leq p_N \leq 40$ bar) length of device: 87.5 mm (without plug) length of device: 103 mm (without plug) netric threads and other versions on request





³ with IS version max. 1 contact is possible

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⁴ with connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible

⁵ 4 contacts and M12x1, 8-pin only possible in combination and together with 4 ... 20 mA/3-wire; 0 ... 10 V/3-wire on request

⁶ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

 $^{^{7}}$ not possible for nominal pressure p $_{N}$ > 40 bar; for G3/4" flush nominal pressure abs. on request

 $^{^8}$ welded version only with pressure ports according to EN 837 and NPT; possible for nominal pressure ranges p $_N$ \leq 40 bar