



DS 201

Electronic Pressure Switch

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

Nominal pressure

from 0 ... 400 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 port PVDF
- customer specific versions

The electronic pressure switch DS 201 is the successful combination of

- intelligent pressure switch
- digital display

and has been specially designed for universal usage in industry applications. The DS 201 is available with flush pressure ports for viscous, pasty and highly polluted media.

As standard the DS 201 offers a PNP contact and a rotable 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



Environmental engineering (water - sewage - recycling)









Electronic Pressure Switch

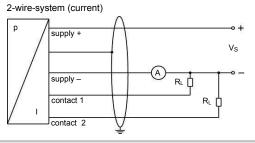
Input pressure range ¹																			
Nominal pressure gauge	e [bar]	-10	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs.	[bar]	-	-	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Level gauge	[mH ₂ O]	-	4	6	10	16	25	40	60	100	160	250	400	600	-	-	-	-	-
Overpressure	[bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800
Burst pressure ≥	[bar]	7	2	4	4	5	5	12	12	25	50	50	120	120	250	500	500	650	880
Vacuum resistance $p_N \ge 1$ bar: unlimited vacuum resistance																			
p _N < 1 bar: on request																			
¹ PVDF pressure port possible for nominal pressure ranges up to 60 bar																			

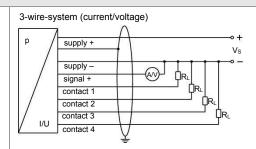
Contact ²										
Standard	1 PNP contact									
Options	2 independent PNP contacts 4 independent PNP contacts (possible with M12x1, 8-pin for 4 20 mA/3-wire; 0 10 V/3-wire on request)									
Max. switching current	4 20 mA / 2- and 3-wire: contact rating 125 mA, short-circuit resistant; V _{Switch} = V _S - 2V contact rating 125 mA, short-circuit resistant									
Accuracy of contacts 3	≤ ± 0.5 % FSO									
Repeatability	≤±0.2 % FSO									
Switching frequency	max. 10 Hz									
Switching cycles	> 100 x 10 ⁶									
Delay time	0 100 sec									
² max. 1 contact for 2-wire current s no contact possible with 3-wire in	ignal with plug ISO 4400 as well as 2-wire current signal with combination with plug ISO 4400	IS-protection								
Analogue output (optionally)	/ Supply									
2-wire current signal	4 20 mA / V_S = 13 36 V_{DC} permissible load: R_{max} = [($V_S - V_{S min}$) / 0.02 A] Ω	respons	se time: < 10 msec							
2-wire current signal with IS-protection	4 20 mA / V_S = 15 28 V_{DC} permissible load: R_{max} = [($V_S - V_{S min}$) / 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 1:5) ⁴ permissible load: R_{max} = 500 $Ω$ response time: < 0.5 sec									
3-wire voltage signal	$0 \dots 10 \text{ V} / \text{V}_S = 15 \dots 36 \text{ V}_{DC}$ permissible load: R _{min} = 10 kΩ response time: < 3 msec									
Without analogue output	V _S = 15 36 V _{DC}									
Accuracy ³	≤ ± 0.5 % FSO									
⁴ with turn-down of span the analog	 limit point adjustment (non-linearity, hysteresis, repeatabilit ue signal is adjusted automatically to the new measuring range 									
Thermal effects (Offset and S	Span) / Permissible temperatures									
Thermal error	≤±0.2 % FSO / 10 K									
In compensated range	-25 85 °C									
Permissible temperatures ⁵	medium: -40 125 °C electronics / environment: -40 85 °C storage: -40 100 °C									
⁵ for pressure port in PVDF the med	lium temperature is -30 60 °C									
Electrical protection										
Short-circuit protection	permanent	permanent								
Reverse polarity protection	no damage, but also no function									
Electromagnetic compatibility	emission and immunity according to EN 61326									
Mechanical stability										
Vibration	10 g RMS (25 2000 Hz) according to DIN E	EN 60068-2-6								
Shock	500 g / 1 msec according to DIN E	EN 60068-2-27								
Materials										
Pressure port / housing		pressure port	housing							
, ,	standard: option for G1/2" open port (up to 60 bar): options for G3/4" flush (0.6 bar $\leq p_N \leq 25$ bar):	stainless steel 1.4404 PVDF PVDF	stainless steel 1.4404 stainless steel 1.4404 PVDF							
Display housing	PA 6.6, polycarbonate									
Seals (media wetted)	standard: FKM option: EPDM ($p_N \le 160$ bar) others on request									
Diaphragm	ceramics Al ₂ O ₃ 96 %									
Media wetted parts	pressure port, seals, diaphragm									

Electronic Pressure Switch

Explosion protection (only for	4 20 mA / 2-wire)									
Approval AX14-DS 201	IBExU 06 ATEX 1050 X									
	zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)									
Safety tech. maximum values	$J_i = 28 \text{ V}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H}$									
Max. switching current ⁶	70 mA									
Permissible temperatures for environment	-25 70 °C									
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 100 pF/m									
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1 µH/m									
⁶ the real switching current in the appl	ication 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 % ± 1 digit; digital damping 0.3 30 sec (programmable); measured value update 0.0 10 sec (programmable)									
Option oxygen application ⁷	for p _N ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C									
Current consumption	2-wire signal output current: max. 25 mA									
(without contacts)	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									
Weight	approx. 200 g									
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									

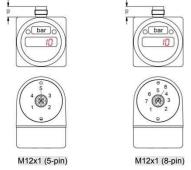
Wiring diagrams

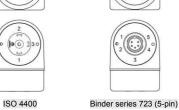




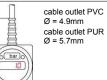
Pin configuration							
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)	cable colours (IEC 60757)	
Supply +	1	1	1	1	1	WH (white)	
Supply –	3	3	3	2	3	BN (brown)	
Signal + (only 3-wire)	2	2	2	3	2	GN (green)	
Contact 1	4	4	4	3	4	GY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

Electrical connections (dimensions in mm)











cable outlet 9

 ⁷ not possible with flush pressure ports
 8 this directive is only valid for devices with maximum permissible overpressure > 200 bar

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)



Ordering code DS 201 DS 201 Pressure gauge in bar 7 8 2 gauge in mH₂O 7 8 E 7 8 3 absolute in bar Input 4 0 0 0 6 0 0 0 0.4 4 0.6 1 0 0 1 1 6 0 1 10 1.0 16 1.6 2 5 0 1 25 2.5 40 4.0 4 0 0 6 0 0 1 1 0 0 2 60 6.0 100 10 1 6 0 2 2 5 0 2 160 16 250 25 4 0 0 2 6 0 0 2 1 0 0 3 400 40 600 60 100 160 6 0 3 2 5 0 3 4 0 0 3 250 400 6 0 0 3 X 1 0 2 9 9 9 9 600 -1 ... 0 customer consult 0 4 ... 20 mA / 2-wire 0 ... 10 V / 3-wire 3 7 4 ... 20 mA / 3-wire, adjustable intrinsic safety 4 ... 20 mA / 2-wire 1 E 9 customer consult Contact 1 contact 1,2 1 2 contacts 1,2 4 contacts 3 4 eserve the right to make modifications to the Accuracy 0.5 % FSO 5 9 consult male plug M12x1 (5-pin) / N 0 1 plastic version male plug M12x1 (8-pin) / 3 M 5 0 plastic version male plug M12x1 (5-pin) / 1 Ν metal version male and female plug ISO 4400 ² 0 0 2 0 4 T A 0 9 9 9 male plug Binder series 723 (5-pin) cable outlet with PVC cable 4 customer consult We 0 0 0 0 0 0 0 0 state of engineering at the time of publishing. G1/2" DIN 3852 1 2 3 4 G1/2" EN 837 G1/4" DIN 3852 G1/4" EN 837 G1/2" DIN 3852 with 5 F 0 0 flush sensor G3/4" DIN 3852 with 6 K 0 0 flush sensor G1/2" DIN 3852 open pressure port 1/2" NPT H 0 0 N 0 0 N 4 0 9 9 9 1/4" NPT customer consult FKM EPDM 7 customer 9 consult stainless steel 1.4404 (316L) 1 B PVDF customer consult in this o Diaphragm ceramics Al₂O₃ 96% 2 customer consult Special version 0 0 0 0 0 7 9 9 9 standard oxygen application 9 consult customer The

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¹ with IS version max.1 contact possible

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

³ 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

 $^{^4}$ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C), others on request

 $^{^5}$ possible for nominal pressure ranges $p_N \ge 0.6$ bar up to $p_N \le 25$ bar gauge, absolute on request

⁶ possible for nominal pressure ranges $p_N \ge 0.6$ bar up to $p_N \le 60$ bar gauge 7 possible for nominal pressure ranges $p_{N} \le 160$ bar

⁸ PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar) and G3/4" DIN 3852 with flush sensor (0.6 bar ≤ p_N ≤ 25 bar); permissible medium temperature: -30 ... 60 °C

 $^{^{\}rm 9}$ oxygen application with FKM-seal up to 25 bar possible, flush version on request