



DS 201

Electronical Pressure Switch

Ceramic Sensor

accuracy according to IEC 60770:
0.5 % FSO

Electronic Pressure Switch

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: 0 ... 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 contaminated media.

As standard the **DS 201** offers a PNP contact and a rotatable display module with 4-digit LED display.

Optional versions like e.g. an intrinsically safe version, max. 4 contacts and an analogue output complete the profile.

Preferred areas of use are:



Plant and Machine Engineering



Environmental Engineering
(water – sewage – recycling)

DS 201



Input pressure range ¹																		
Nominal pressure gauge [bar]	-1...0	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 ≥ 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 0 ... 10 V / 3-wire: contact rating 500 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 signal with plug ISO 4400 as well as 2-wire current signal with IS-protection
no contact possible with 3-wire in combination with plug ISO 4400

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 response time: < 10 msec
2-wire current signal with IS-protection	4 ... 20 mA / V _s = 13 ... 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 ... 10 V / V _s = 15 ... 36 V _{DC} permissible load: R _{min} = 10 kΩ response time: < 10 msec
Without analogue output	V _s = 15 ... 36 V _{DC}
Accuracy ³	≤ ± 0.5 % FSO

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

⁴ with turn-down of span the analogue signal is adjusted automatically to the new measuring range

Thermal effects (Offset and 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 of PVC the maximum permissible temperature is 50 °C

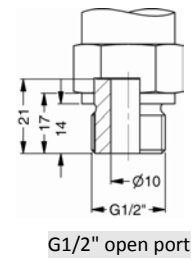
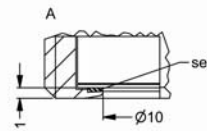
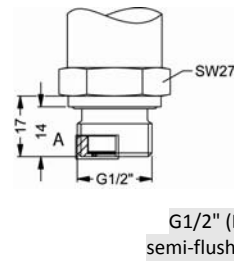
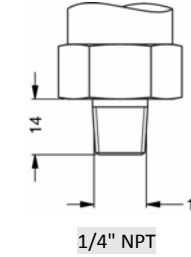
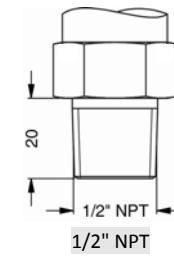
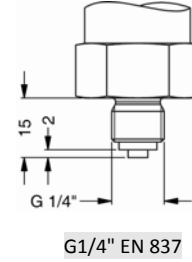
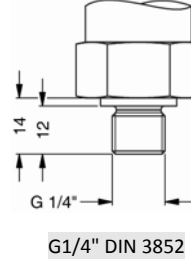
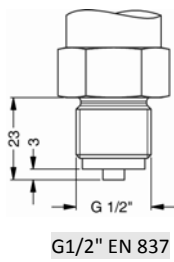
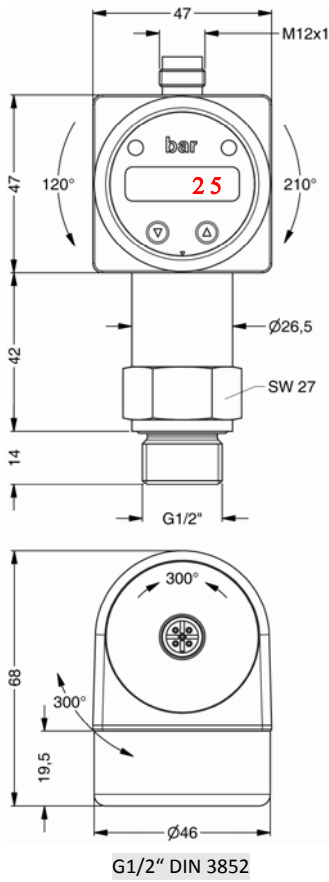
Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27

Materials			
Pressure port / housing	Standard:	pressure port	housing
	Option for G1/2" open port (up to 60 bar): Options for G3/4" flush (0.6 bar ≤ P _N ≤ 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 ≤ 160 bar), NBR others on request		
Diaphragm	ceramics Al ₂ O ₃ 96 %		
Media wetted parts	pressure port, seals, diaphragm		

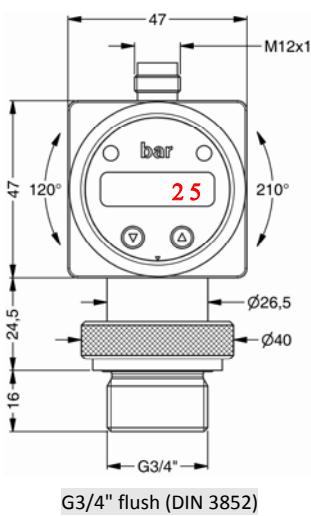
Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approval AX14-DS 201	IBExU 06 ATEX 1050 X zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)					
Safety tech. maximum values	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$					
Max. switching current ⁶	70 mA (max. permissible inductivity: 4.7 mH)					
Permissible temperatures for environment	-20 ... 70 °C					
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$					
⁶ the real switching current in the application 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 % \square 1 digit; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)					
Option oxygen application ⁷	for $P_N \leq 25 \text{ bar}$: O-ring in special material with oxygen-approval					
Current consumption (without contacts)	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					
Weight	approx. 200 g					
Operational life	$> 100 \times 10^6$ cycles					
CE-conformity	EMC Directive: 2004/108/EC			Pressure Equipment Directive: 97/23/EC (module A) ⁸		
⁷ not possible with flush pressure ports						
⁸ This directive is only valid for devices with maximum permissible overpressure > 200 bar						
Wiring diagrams						
<p>2-wire-system (current)</p>			<p>3-wire-system (current / voltage)</p>			
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 (DIN 47100)
Supply +	1	1	1	1	3	wh (white)
Supply -	3	3	3	2	4	bn (brown)
Signal + (only 3-wire)	2	2	2	3	5	gn (green)
Contact 1	4	4	4	3	2	gr (grey)
Contact 2	5	5	5	-	1	pn (pink)
Contact 3	-	-	6	-	-	-
Contact 4	-	-	7	-	-	-
Shield	via pressure port	plug housing/ pressure port	via pressure port	ground contact	plug housing/ pressure port	gn/ye (green/yellow)
Electrical connections (dimensions in mm)						
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)						

Mechanical connections (dimensions in mm)



⇨ metric threads and others on request

optionally for P_N from 0.6 up to 60 bar gauge



¹⁰ possible for nominal pressure ranges $P_N \leq 40$ bar

This data sheet contains product specification, properties are not guaranteed. Subject to change without notice.

