



DS 201 P

Electronic Pressure Switch with Flush Diaphragm

- ▶ ceramic sensor
- ▶ for viscous and pasteous media
- ▶ media temperatures up to 150 °C
- ▶ nominal pressure ranges from 0 ... 1 bar up to 0 ... 400 bar

The electronic pressure switch DS 201 P is the successful combination of:

- flush pressure transmitter
- intelligent pressure switch
- digital display

The DS 201P is designed for applications in the machine-building industry and other industries where a flush stainless steel diaphragm is necessary. This can be the case, for example, with viscous or slightly contaminated fluids.

Basic element is a ceramic sensor. The 4-digit LED display shows the system pressure and supports programming the DS 201P using the foil keys. Set and reset points are freely configurable in the range 0 to 100 % of the nominal pressure. Display and housing of the DS 201 P are rotatable, so that the position of the display can be easily adapted to unusual installation conditions.

All devices can be supplied with a cooling element for usage with higher media temperature. The pressure switch is suitable for explosive area.

Preferred areas of use are:

- ▶ pharmacy
- ▶ foodstuff industry

- ▶ configuration of display, including
 - current value
 - decimal point
- ▶ contacts adjustable, including
 - switch on / switch off points
 - hysteresis / window mode
 - switch on / switch off delay
- ▶ special functions / administration
 - access protection
 - min. / max. value memory

Functions



DS 201 P
Electronic Pressure Switch

Input pressure range

Nominal pressure gauge [bar]	-1 ... 0 ¹	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Nominal pressure abs. ¹ [bar]	-	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400
Permissible overpressure [bar]	3	3	7	7	12	12	25	50	50	120	120	250	500	500	600

Output signal / Supply

Analogue output

Standard	2-wire: 4 ... 20 mA / $V_s = 18 \dots 41 V_{DC}$	Ex protection: $V_s = 17 \dots 28 V_{DC}$
Optional	3-wire: 0 ... 10 V / $V_s = 15 \dots 36 V_{DC}$	4 ... 20 mA / $V_s = 19 \dots 30 V_{DC}$ (on request)
Accuracy	IEC 60770 ² : $\leq \pm 0.5\%$ FSO	BFSL: $\leq \pm 0.25\%$ FSO
Permissible load	current 2-wire: $R_{max} = [(V_s - V_{smin}) / 0.02] \Omega$ voltage 3-wire: $R_{min} = 10 k\Omega$	
Response time	< 10 msec ³	

Contact^{4,5}

Number, types	1 or 2 independent PNP contacts
Switching current	standard: contact rating max. 125 mA, short-circuit resistance Ex-protection: max. switching current ⁶ : 70 mA; max. permissible inductivity: 4.7 mH
Accuracy of contacts	IEC 60770 ² : $\leq \pm 0.5\%$ FSO BFSL: $\leq \pm 0.25\%$ FSO
Repeatability	$\leq \pm 0.2\%$ FSO
Switching frequency	max. 10 Hz
Switching cycles	> 100 x 10 ⁶
Delay time	0 ... 100 sec

Thermal effects (Offset and Span)⁷

Thermal error	$\leq \pm 0.2\%$ FSO / 10 K
in compensated range	-25 ... 85 °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
Option Ex-protection only for 4 ... 20 mA / 2-wire AX11-DS 201 P	zone (0) 1: II (1) 2 G EEx ia IIC T4 safety technical maximum values: $V_i = 28 V$, $\Sigma I_i = 93 mA$, $\Sigma P_i = 660 mW$

Display

Type	4-digit, red LED display, digit height 7 mm, digit width 4.85 mm (angle 10 °)
Range	-1999 ... +9999
Accuracy	0.1 % \pm 1 digit
Digital damping	0.3 ... 30 sec (programmable)
Measured value update	0.0 ... 10 sec (programmable)

Mechanical stability

Vibration	5 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec

¹ for vacuum ranges and nominal pressure abs. the max. medium temperature is 70 °C

² accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

³ with 3-wire version 4 ... 20 mA the response time is 1 sec

⁴ with connector DIN 43650 and output 4 ... 20 mA / 2-wire max. 1 contact possible; with 0 ... 10 V / 3-wire no contact possible

⁵ with Ex-protection max. 1 contact possible

⁶ the real switching current in the application depends on the power supply unit

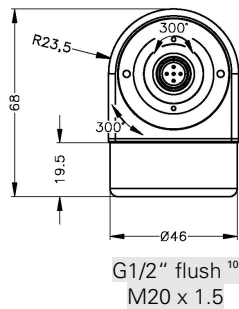
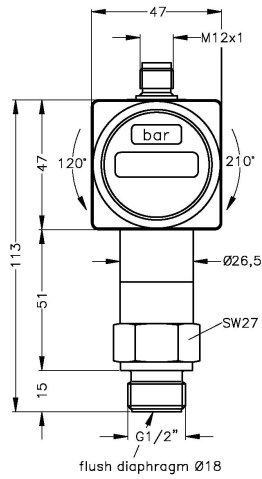
⁷ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

Permissible temperatures

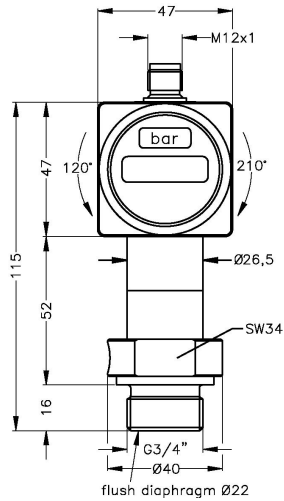
Medium	-25 ... 135 °C ^{1,8}	
Electronics / environment	-25 ... 85 °C	Ex-protection: -25 ... 70 °C
Storage	-40 ... 85 °C	

Mechanical connection

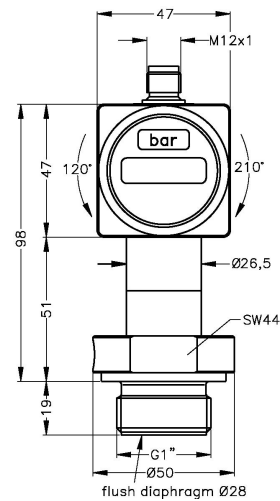
Standard



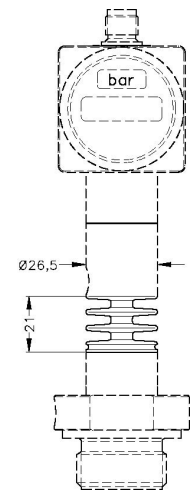
Options



G3/4" flush
(DIN 3852)

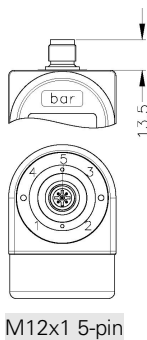


G1" flush
(DIN 3852)

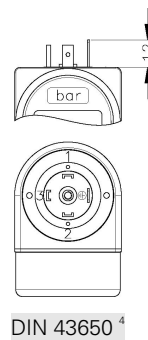


cooling element
150 °C ⁹

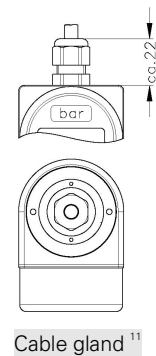
Electrical connection



M12x1 5-pin



DIN 43650 ⁴



Cable gland ¹¹

⁸ with optional cooling element its maximum permissible temperature is valid

⁹ for max. 100 bar

¹⁰ only possible for nominal pressure ranges $P_N \geq 1.6$ bar

¹¹ different cable types and lengths available; standard : 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube

Filling fluids

Standard	silicon oil
Optional	food compatible oil (with FDA approval) / Halocarbon / others on request

Materials

Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Display housing	PA 6.6, Polycarbonate
Seals (media wetted)	$P_N < 100$ bar: FKM / $P_N \geq 100$ bar: NBR / others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

Current consumption (without contacts)	signal output current: max. 25 mA signal output voltage: max. 18 mA
Weight	min. 200 g (depending on pressure port)
Installation position	any ¹²
Ingress protection	IP 65

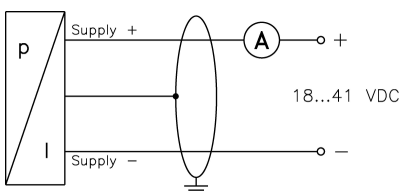
Pin configuration

Electrical connection		M12x1 plastic (5-pin)	M12x1 metal (5-pin)	DIN 43650	cable colours (DIN 47100)
2-wire-system	Supply +	1	1	1	white
	Supply -	3	3	2	brown
	Contact 1	4	4	3	grey
	Contact 2	5	5	-	pink
	Ground	via pressure port	plug housing	ground contact	yellow / green (shield)
3-wire-system	Supply +	1	1	1	white
	Supply -	3	3	2	brown
	Signal +	2	2	3	green
	Contact 1	4	4	-	grey
	Contact 2	5	5	-	pink
Ground	via pressure port	plug housing	ground contact	yellow / green (shield)	

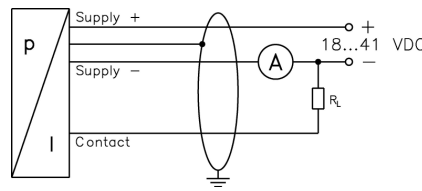
Wiring diagrams

2-wire-system (current) (for Ex protection: supply $V_S = 17 \dots 28 V_{DC}$; max. 1 contact possible)

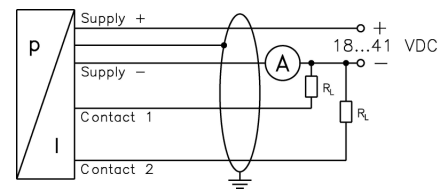
without contact



1 contact

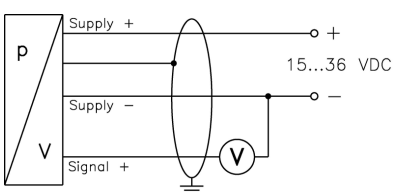


2 contacts

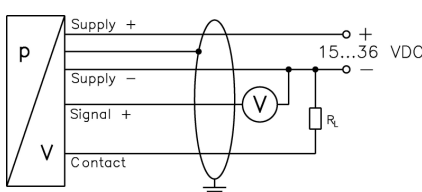


3-wire-system (current)

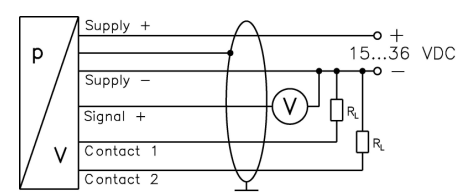
without contact



1 contact



2 contacts



¹² Pressure switches are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges ≤ 1 bar.

Ordering Code DS 201P

DS 201P

□□□ - □□□□ - □ - □ - □ - □□□ - □□□□ - □ - □ - □ - □□□

Pressure										
gauge	7	8	7							
absolute ¹	7	8	8							
Input [bar]										
1,0 ²	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						
60	6	0	0	2						
100	1	0	0	3						
160	1	6	0	3						
250	2	5	0	3						
400	4	0	0	3						
-1 ... 0 ¹	X	1	0	2						
customer	9	9	9	9						
Analogue output										
4 ... 20 mA / 2-wire					1					
0 ... 10 V / 3-wire					3					
4 ... 20 mA / 3-wire					7					
Intrinsic safety 4 ... 20 mA / 2-wire ³					E					
customer					9					
Contact										
1 contact ^{3,4}						1				
2 contacts ^{3,4}						2				
Accuracy										
0,5 %						5				
customer						9				
Electrical connection										
M12x1 (5-pin) / plastic version					N	0	0			
M12x1 (5-pin) / metal version					N	1	0			
Male and female plug DIN 43650 ⁴					1	0	0			
Cable gland incl. Cable ⁵					4	0	0			
customer					9	9	9			
Mechanical connection										
G1/2" DIN 3852 with ²							Z	0	0	
flush diaphragm										
G3/4" DIN 3852 with							Z	3	0	
flush diaphragm										
G1" DIN 3852 with							Z	3	1	
flush diaphragm										
customer							9	9	9	
Diaphragm										
Stainless steel 1.4435 (316L)								1		
customer								9		
Seals										
for P _N < 100 bar									1	
FKM										
for P _N ≥ 100 bar									5	
NBR										
customer									9	
Filling Fluids										
Silicon oil									1	
food compatible oil ⁶									2	
Halocarbon									C	
customer									9	
Special version										
standard								0	0	0
with cooling element up to 150°C ⁷								1	5	0
customer								9	9	9

¹ for vacuum and nominal pressure abs. the max. medium temperature is 70 °C
² pressure ranges P_N < 1,6 bar not with mechanical connection G1/2"
³ with Ex version max. 1 contact is possible
⁴ with connector DIN 43650 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible
⁵ different cable types and lengths deliverable, standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube
⁶ Name of oil: Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662
⁷ cooling element up to 150°C not with pressure range P_N > 100 bar

This ordering code contains product specification; properties are not guaranteed. Subject to change without notice.