



DS 201P

Electronic Pressure Switch

Pressure Port with Flush Welded
Stainless Steel Diaphragm

accuracy according to IEC 61298-2:
0.5 % FSO

Nominal pressure

from 0 ... 60 bar up to 400 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
- ▶ cooling element up to 300 °C
- ▶ customer specific versions

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

- ▶ intelligent pressure switch
- ▶ digital display

and is designed for universal applications in the
mechanical engineering and other industries
where a flush stainless steel diaphragm is
necessary. This can be the case, for example,
with higher viscous or slightly polluted fluids. For
usage with higher media temperature optionally a
cooling element up to 300 °C is available.

Preferred areas of use are



Plant and machine engineering



Food industry

Preferred used for



Viscous and pasty media



Input pressure ranges					
Nominal pressure gauge/abs. [bar]	60	100	160	250	400
Overpressure [bar]	100	200	400	400	600
Burst pressure $\geq$ [bar]	120	250	500	500	650

Contact ¹	
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: 0 ... 10 V / 3-Leiter: contact rating 125 mA, short-circuit resistant; $V_{\text{switch}} = V_S - 2V$ contact rating 125 mA, short-circuit resistant
Accuracy of contacts ²	$\leq \pm 0.5\%$ FSO
Repeatability	$\leq \pm 0.2\%$ FSO
Switching frequency	max. 10 Hz
Switching cycles	$> 100 \times 10^6$
Delay time	0 ... 100 sec

¹ max. 1 contact for 2-wire current signal with plug ISO 4400 as well as 2-wire current signal with Ex-protection no contact possible with 3-wire in combination with plug ISO 4400

² accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)

Analogue output (optionally) / Supply	
2-wire current signal	4 ... 20 mA / $V_S = 13 \dots 36 V_{DC}$ permissible load: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 A] \Omega$ response time: $< 10 \text{ msec}$
2-wire current signal with Ex-protection	4 ... 20 mA / $V_S = 15 \dots 28 V_{DC}$ permissible load: $R_{\text{max}} = [(V_S - V_{S \text{ min}}) / 0.02 A] \Omega$ response time: $< 10 \text{ msec}$
3-wire current signal	4 ... 20 mA / $V_S = 19 \dots 30 V_{DC}$ adjustable (turn-down of span max. 1:5) ³ permissible load: $R_{\text{max}} = 500 \Omega$ response time: $< 0.5 \text{ sec}$
3-wire voltage signal	0 ... 10 V / $V_S = 15 \dots 36 V_{DC}$ permissible load: $R_{\text{min}} = 10 \text{ k}\Omega$ response time: $< 10 \text{ msec}$
Without analogue output	$V_S = 15 \dots 36 V_{DC}$
Accuracy ²	$\leq \pm 0.5\%$ FSO

³ with turn-down of span the analogue signal is adjusted automatically to the new measuring range

Thermal error (offset and span) ⁴	
Thermal error	$\leq \pm 0.2\%$ FSO / 10 K
In compensated range	0 ... 85°C

⁴ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions

Permissible temperatures		
Filling fluid	silicone oil	food compatible oil
Medium ⁵	-40 ... 125 °C	-10 ... 125 °C
Medium with cooling element ⁶	overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C	overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C
Electronics / environment	-40 ... 85 °C	
Storage	-40 ... 100 °C	

⁵ max. temperature of the medium for overpressure $> 0 \text{ bar}$: 150 °C for 60 minutes with a max. environmental temperature of 50 °C

⁶ max. temperature depends on the used sealing material, type of seal and installation

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	20 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6 10 g RMS / 10 ... 2000 Hz according to DIN EN 60068-2-6 (with cooling element)
Shock	500 g / 1 msec half sine according to DIN EN 60068-2-27

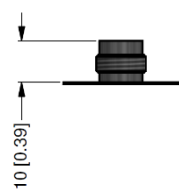
Filling fluids	
Standard	silicone oil
Optional	food compatible oil with FDA approval (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request

Materials	
Pressure port / housing	stainless steel 1.4404 (316 L)
Display housing	PA 6.6, Polycarbonate
Seals	standard: FKM (recommended for medium temperatures $\leq 200 \text{ °C}$) option: FFKM ⁷ (recommended for medium temperatures $< 260 \text{ °C}$) others on request
Diaphragm	stainless steel 1.4435
Media wetted parts	pressure port, seals, diaphragm

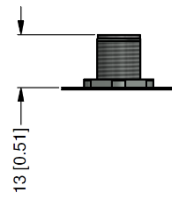
⁷ for pressure ranges $p_N \leq 100 \text{ bar}$

Explosion protection (only for 4 ... 20 mA / 2-wire)					
Approval AX14-DS 201P	IBExU06ATEX1050 X zone 1: II 2G Ex ia IIC T4 Gb				
Safety technical maximum values	$U_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$, $C \approx 0 \text{ nF}$, $L_i \approx 0 \text{ }\mu\text{H}$				
Max. switching current ⁸	70 mA				
Max. 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 $\mu\text{H}/\text{m}$				
⁸ 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 % $\pm$ 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. 45 mA + signal current 3-wire signal output voltage: approx. 45 mA				
Ingress protection	IP 65				
Installation position	any (standard calibration in a vertical position with the pressure port connection down)				
Weight	min. 200 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) ⁹				
ATEX Directive	2014/34/EU				
⁹ This directive is only valid for devices with maximum permissible overpressure > 200 bar.					
Wiring diagrams					
2-wire-system (current)	3-wire-system (current/voltage)				
Pin configuration					
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	M12x1 plastic (8-pin)	ISO 4400	Binder series 723 (5-pin)
Supply +	1	1	1	1	1
Supply -	3	3	3	2	3
Signal + (only 3-wire)	2	2	2	3	2
Contact 1	4	4	4	3	4
Contact 2	5	5	5	-	5
Contact 3	-	-	6	-	-
Contact 4	-	-	7	-	-
Shield	via pressure port	plug housing/pressure port	via pressure port	ground contact	plug housing/pressure port

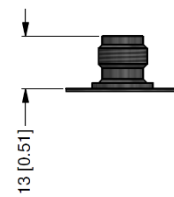
Electrical connections (dimensions mm / in)



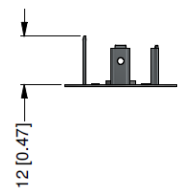
M12x1 plastic
(5-pin)



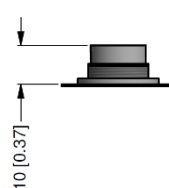
M12x1 metal
(5-pin)



M12x1 plastic
(8-pin)

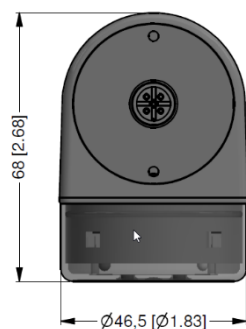
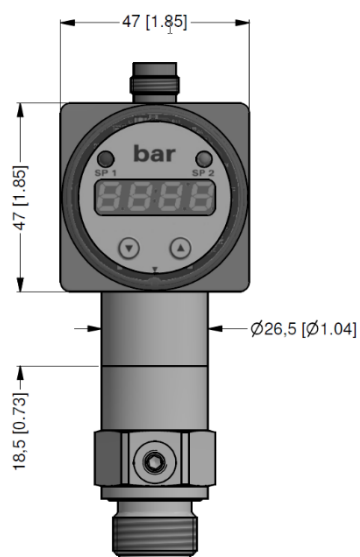


ISO 4400

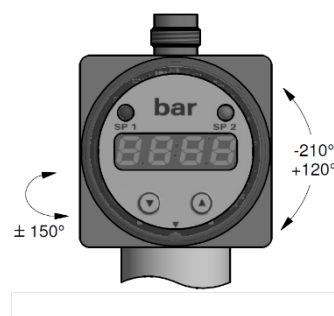


Binder series 723
(5-pin)

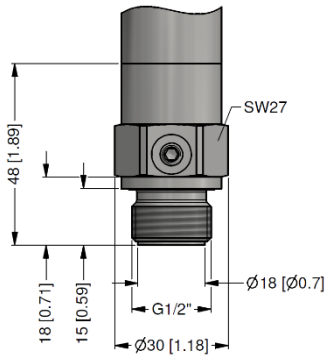
Dimensions (mm / in)



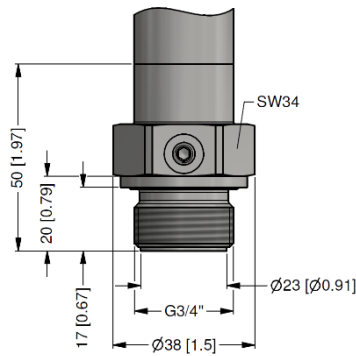
rotatability of display module



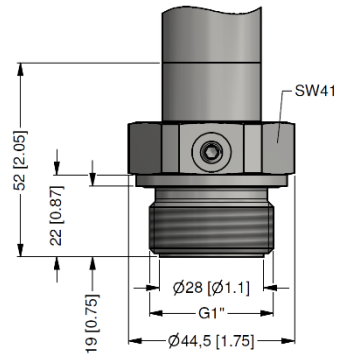
Mechanical connection (dimensions mm / in)



G1/2" flush DIN 3852



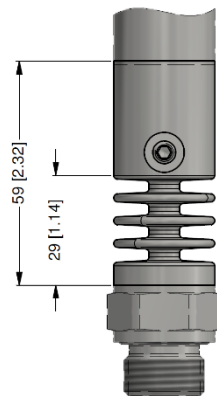
G3/4" flush DIN 3852



G1" flush DIN 3852

⇒ metric threads and other versions on request

Cooling element up to 300 °C ⁶ (optionally)



possible for $p_N \leq 160$ bar

⁶ max. temperature depends on the used sealing material, type of seal and installation

The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials.

Ordering code DS 201P

DS 201P

[illegible][illegible]¹ with IS version max. 1 contact is 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 possible for nominal pressure ranges $p_N \leq 100$ bar

⁵ cooling element up to 300°C not possible for pressure range $p_N > 160$ bar