



DS 201P

Electronic Pressure Switch

Pressure Port with Flush Welded
Stainless Steel Diaphragm

accuracy according to EN IEC 62828-2:
0.5 % span

Nominal pressure

from 0 ... 60 bar up to 400 bar

Contacts

1 or 2 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
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-Leiter: contact rating 125 mA, short-circuit resistant
Accuracy of contacts ²	$\leq \pm 0.5\%$ span
Repeatability	$\leq \pm 0.2\%$ span
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 EN IEC 62828-2– 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: $R_{max} = [(V_S - V_{Smin}) / 0.02 A] \Omega$ response time: < 10 msec
2-wire current signal with Ex-protection	4 ... 20 mA / $V_S = 15 \dots 28 V_{DC}$ permissible load: $R_{max} = [(V_S - V_{Smin}) / 0.02 A] \Omega$ response time: < 10 msec
3-wire current signal	4 ... 20 mA / $V_S = 19 \dots 30 V_{DC}$ adjustable (turn-down of span max. 5:1) ³ permissible load: $R_{max} = 500 \Omega$ response time: < 0.5 sec
3-wire voltage signal	0 ... 10 V / $V_S = 15 \dots 36 V_{DC}$ permissible load: $R_{min} = 10 k\Omega$ response time: < 10 msec
Accuracy ²	$\leq \pm 0.5\%$ span

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

Thermal error (offset and span) ⁴ / Permissible temperatures	
Thermal error	$\leq \pm 0.2\%$ span / 10 K
in compensated range	-20 ... 85°C
Permissible temperatures ⁵	medium ⁵ : -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C
Permissible temperature medium for cooling element ⁶	filling fluid silicone oil overpressure: -40 ... 300 °C vacuum: -40 ... 150 °C filling fluid food compatible oil overpressure: -10 ... 250 °C vacuum: -10 ... 150 °C

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

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

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	5 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	100 g / 11 msec according to DIN EN 60068-2-27

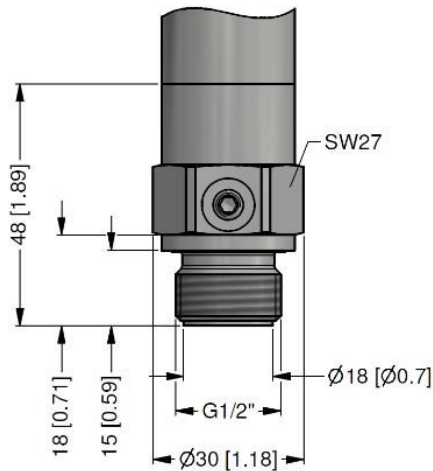
Filling fluids	
Standard	silicone oil
Optional	food compatible oil with FDA approval (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request

Materials	
Pressure port	stainless steel 1.4435 (316 L)
Housing	stainless steel 1.4404 (316 L)
Display housing	PA 6.6, Polycarbonate
Seals	standard: FKM (for media temperature ≤ 200 °C) option: FFKM ⁷ (for media temperature < 260 °C) others on request
Diaphragm	stainless steel 1.4435
Media wetted parts	pressure port, seals, diaphragm

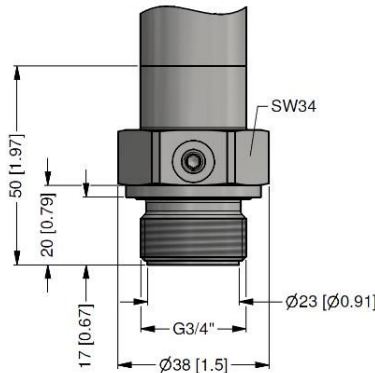
⁷ for pressure ranges $P_N \leq 100$ bar

Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approval AX4-DS 201P	IBExU06ATEX1049 X zone 1: II 2G Ex ia IIC T4 Gb (connector) / II 2G Ex ia IIB T4 Gb (cable)					
Safety technical maximum values	$U_i = 28\text{ V}$, $I_i = 93\text{ mA}$, $P_i = 660\text{ mW}$, $C \approx 0\text{ nF}$, $L_i \approx 0\text{ }\mu\text{H}$					
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 μH/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 % ± 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						
<p>2-wire-system (current)</p>	<p>3-wire-system (current/voltage)</p>					
Pin configuration						
Electrical connection	M12x plastic (5-pin)	M12x metal (5-pin)	M12x 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 for 3-wire)	2	2	2	3	2	GN (green)
Contact 1	4	4	4	3	4	GN (grey)
Contact 2	5	5	5	-	5	PK (pink)
Contact 3	-	-	6	-	-	-
Contact 4	-	-	7	-	-	-
Shield	via pressure port	plug housing/pressure port	via pressure port	ground pin	plug housing/pressure port	GNYE (green-yellow)
Electrical connections (dimensions in mm)						
<p>M12x1 plastic (5-pin)</p>	<p>M12x1 metal (5-pin)</p>	<p>M12 x1 (8-pin)</p>	<p>ISO 4400</p>	<p>Binder series 723 (5-pin)</p>	<p>cable outlet ¹⁰</p>	<p>cable outlet PVC Ø = 4.9mm cable outlet PUR Ø = 5.7mm</p>
¹⁰ 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)						

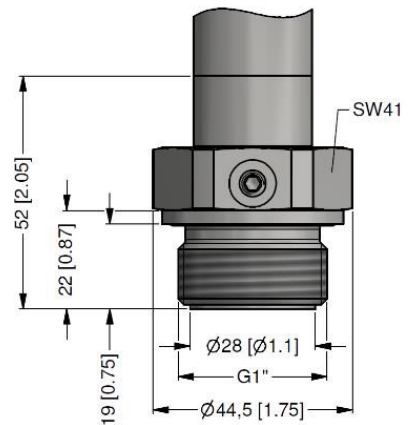
Mechanical connection (dimensions in mm)



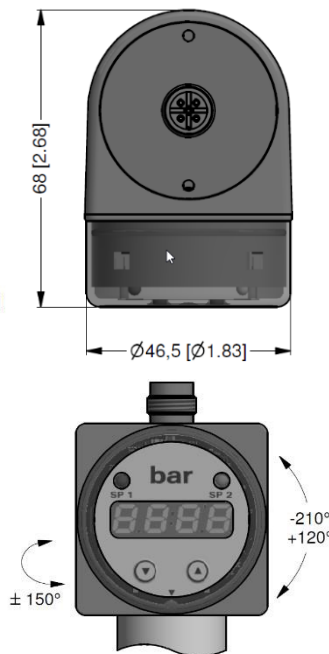
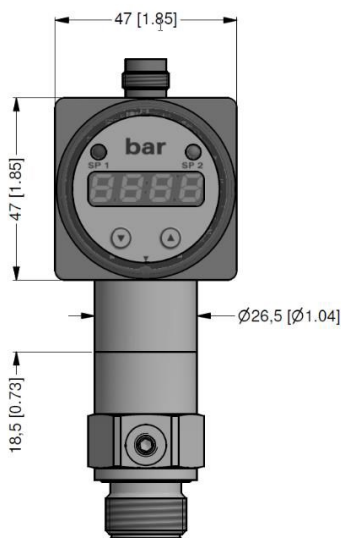
G1/2" flush



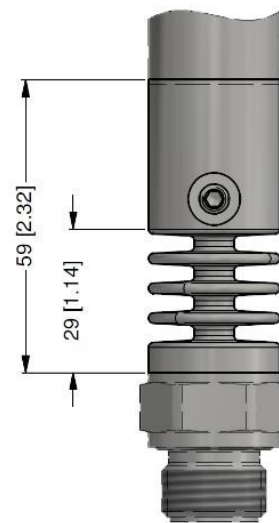
G3/4" flush



G1" flush



rotatability of display module



cooling element 300 °C¹¹

⇒ metric threads and other versions on request

¹¹ for pressure ranges $P_N \leq 160$ bar; max. temperature depends on the used sealing material, type of seal and installation

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The manufacturer provides the EU declaration of conformity.

Calibration - All production undergoes output control, which is performed by comparison with standards. The traceability of standards and working gauges is ensured in accordance with Act No. 505/1990, as amended, on metrology.

The manufacturer offers the possibility to supply sensors calibrated in the calibration laboratory of BD SENSORS, accredited according to ČSN EN ISO / IEC 17025: 2018.

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



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