



DM 201

Digital Pressure Gauge

- ▶ ceramic sensor
- ▶ optional:
 - analogue output
 - Ex-protection (for 2-wire)
 - oxygen application
 - flush pressure port
- ▶ nominal pressure ranges
from 0 ... 160 mbar
up to 0 ... 600 bar

Description

The digital pressure gauges DM 201 is suitable for the usage in viscous, pasty or highly contaminated fluids. Compared to the universally used basic type DM 200, the DM 201 has a mechanically and chemically robust ceramic sensor instead of a stainless steel sensor. For aggressive media additionally the device could be equipped with a pressure port in PVDF or PVC.

Operation

The rotatable display module shows the system pressure and allows programming. The device can be operated menu-driven via two push buttons. Beside the possibility to configure the display parameters (decimal point position, damping, etc.) the measured minimum and maximum values can be indicated. Furthermore, an access protection can be activated in the menu system.

Applications

- ▶ environmental engineering
- ▶ machine and plant engineering

- ▶ option analogue output:
 - 4 ... 20 mA / 2-wire
 - 4 ... 20 mA / 3-wire
with turn-down 1:5
 - 0 ... 10 V / 3-wire
- ▶ indication of measured values on a 4-digit LED display
- ▶ rugged, rotatable plastic housing
- ▶ easy configuration via two push buttons
- ▶ ingress protection IP 65
- ▶ variety of mechanical connections
- ▶ industrial standard in view of accuracy, thermal behaviour and long term stability

Characteristics



DM 201
Digital Pressure Gauge

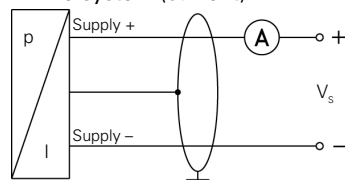
Input pressure range ¹										
Nominal pressure gauge / abs. [bar]	-1...0	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6
Level gauge [mWC]	-	1.6	2.5	4	6	10	16	25	40	60
Permissible overpressure [bar]	3	0.6	0.6	1.5	3	3	7	7	12	12
Nominal pressure gauge / abs. [bar]	10	16	25	40	60	100	160	250	400	600
Level gauge [mWC]	100	160	250	400	600	-	-	-	-	-
Permissible overpressure [bar]	25	50	50	120	120	250	500	500	600	750
¹ nominal pressure range abs. from 0.6 bar; pressure ranges 0.16 up to 0,4 bar only with G1 1/2" flush (DIN 3852)										
Analogue output (optionally) / Supply										
2-wire current signal	4 ... 20 mA / V _s = 18 ... 41 V _{DC} permissible load: R _{max} = [(V _s - V _{s.min}) / 0.02] Ω response time: < 10 ms									
2-wire current signal with Ex-protection	4 ... 20 mA / V _s = 17 ... 28 V _{DC} permissible load: R _{max} = [(V _s - V _{s.min}) / 0.02] Ω response time: < 10 ms									
3-wire current signal ²	4 ... 20 mA / V _s = 19 ... 30 V _{DC} adjustable (turn-down of span 1:5) ³ permissible load: R _{max} = 500 Ω response time: < 1 s									
3-wire voltage signal ²	0 ... 10 V / V _s = 15 ... 36 V _{DC} permissible load: R _{min} = 10 kΩ response time: < 10 ms									
Without analogue output	V _s = 15 ... 36 V _{DC}									
Accuracy ⁴	IEC 60770: ≤ ± 0.5 % FSO					BFSL: ≤ ± 0.25 % FSO				
Measuring rate of display	approx. 10/s									
² not possible with G 1 1/2" flush										
³ with turn-down of span the analogue signal is adjusted automatically to the new measuring range										
⁴ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)										
Thermal errors (offset and span) / Permissible temperatures										
Thermal errors	≤ ± 0.2 % FS / 10 K in compensated range -25 ... 85 °C									
Permissible temperatures ⁵	medium: -25 ... 135 °C electronics / environment: -25 ... 85 °C storage: -40 ... 85 °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	5 g RMS (20 ... 2000 Hz)									
Shock	100 g / 11 msec.									
Materials										
Pressure port / housing	Standard: G1 1/2" flush: Option for G1/2" open port (up to 60 bar): Options for G 3/4" flush (0.6 bar ≤ P _N ≤ 25 bar):					pressure port stainless steel 1.4571 stainless steel 1.4571 PVDF PVDF PVC grey		housing stainless steel 1.4301 stainless steel 1.4305 stainless steel 1.4301 PVDF PVC grey		
Display housing	PA 6.6, polycarbonate									
Seals (media wetted)	P _N < 100 bar: FKM / P _N ≥ 100 bar: NBR others on request									
Diaphragm	ceramics Al ₂ O ₃ 96 %									
Media wetted parts	pressure port, seals, diaphragm									
Explosion protection (for 2-wire current signal with Ex-protection)										
Approval AX11-DM 201	stainless steel pressure port: zone (0) 1: II (1) 2 G Ex ia IIC T4 plastic pressure port: zone 1: II 2 G Ex ia IIC T4									
Safety technical maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW									
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 µH/m									

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)
Optionally oxygen application ⁶	for $P_N \leq 50$ bar: O-ring in V747-75 (with BAM-approval); permissible maximum values are 40 bar / 130° C and 50 bar / 100° C for $P_N > 50$ bar: O-ring in FKM 90 (approved by the scientific coal research institute in Ostrava – CZ) up to max. 215 bar / 95 °C
Current consumption	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
Data storage	EEPROM (non-volatile)
Ingress protection	IP 65
Installation position	any
Weight	approx. 200 g
Operational life	> 100 x 10 ⁶ cycles

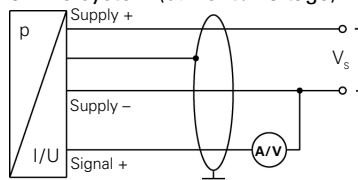
⁶ not possible with flush pressure ports

Wiring diagrams

2-wire-system (current) ⁷



3-wire-system (current / voltage)

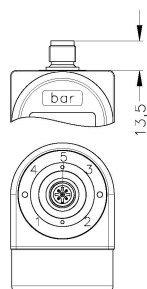


⁷ for devices with Ex-protection the operating manual has to be considered

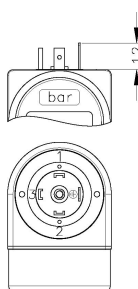
Pin configuration

Electrical connections	M12x1 plastic (5-polig)	M12x1 metal (5-polig)	ISO 4400	cable colour (DIN 47100)
Supply +	1	1	1	white
Supply -	3	3	2	brown
Signal + (only 3-wire)	2	2	3	green
Ground	via pressure port	plug housing / pressure port	ground contact	yellow / green (shield)

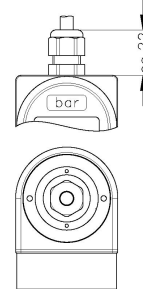
Electrical connections



M12x1 (5-pin)



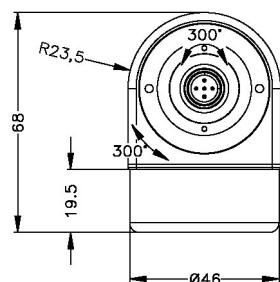
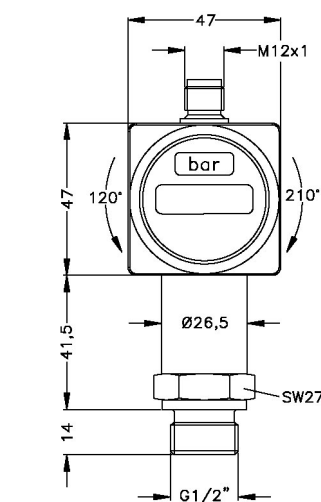
ISO 4400



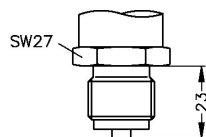
Cable gland ⁸

⁸ different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube)

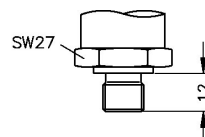
Mechanical connections



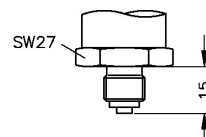
G1/2" DIN 3852
M20x1.5



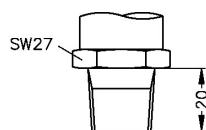
G1/2" EN 837
M20x1.5



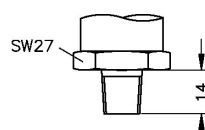
G1/4" DIN 3852
M10x1; M12x1; M12x1.5
(from 0.6 up to 100 bar)



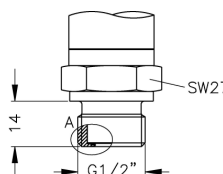
G1/4" EN 837



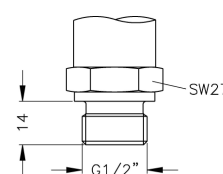
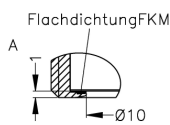
1/2" NPT



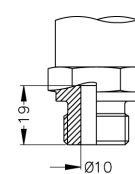
1/4" NPT



G1/2" flush (DIN 3852); M20x1.5 (from 0.6 up to 25 bar;
nominal pressure range abs. on request)

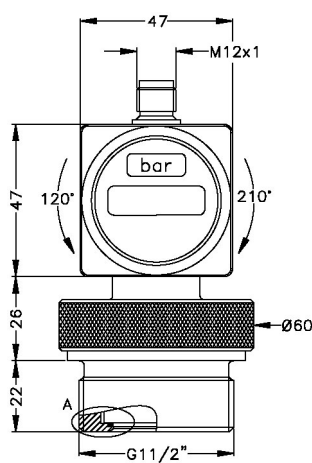


G1/2" open port (DIN 3852);
M20x1.5

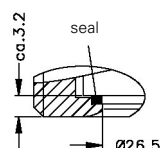


⇒ Ex-protection: total length increases by 10 mm!

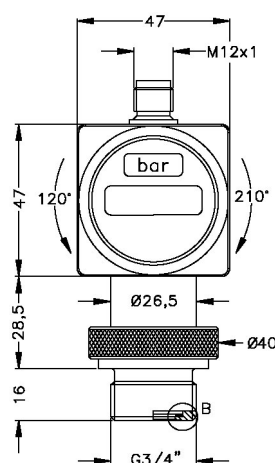
standard for P_n from 0.16 up to 0.4 bar gauge



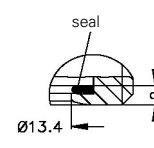
G1 1/2" flush (DIN 3852)
M20 x 1,5



optionally for P_n from 0.6 up to 60 bar gauge



G3/4" flush (DIN 3852)⁹



- ⇒ PVC and PVDF versions are 3.5 mm (G1 1/2") resp. 3 mm (G3/4") longer!
- ⇒ Ex protection with G3/4": total length increases by 17.5 mm!

⁹ nominal pressure ranges > 25 bar with Ø 40 and spanner flat SW 34 (without knurled ring)

DM 201

□□□□ - □□□□□□ - □□ - 0 - □□ - □□□□ - □□□□ - □□ - □□ - □□ - □□□□

1 nominal pressure ranges from 0.16 up to 0,4 bar and G1 1/2" DIN 3852 only in combination
2 impossible with G1 1/2" DIN 3852
3 with Ex version max.1 contact possible
4 with connector ISO 4400 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 G1/2" flush up to 25 bar and G3/4" flush up to 60 bar possible; nominal pressure abs. on request
7 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 $\leq P_N \leq 25$ bar)
8 PVC only with G3/4" DIN 3852 with flush sensor (0,6 bar $\leq P_N \leq 25$ bar)
9 oxygen application possible up to 160 bar; impossible with flush pressure ports