



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



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Technical Data

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 [mH ₂ O]	-	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 [mH ₂ O]	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	housing				
						stainless steel 1.4571	stainless steel 1.4301				
						stainless steel 1.4571	stainless steel 1.4305				
						PVDF	stainless steel 1.4301				
						PVDF	PVDF				
						PVC grey	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										

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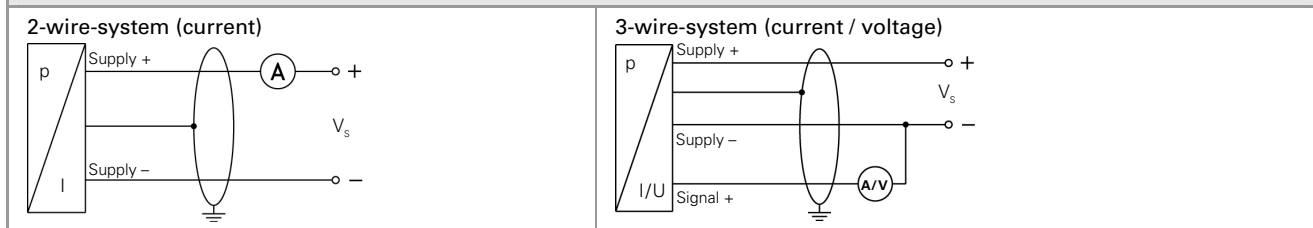
Digital Pressure Gauge

Technical Data

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	$> 100 \times 10^6$ cycles

⁶ not possible with flush pressure ports

Wiring diagrams



Pin configuration

Electrical connections	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	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 (dimensions in mm)

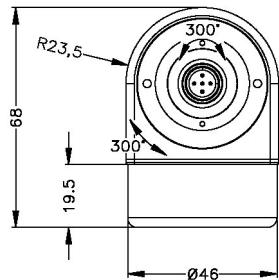
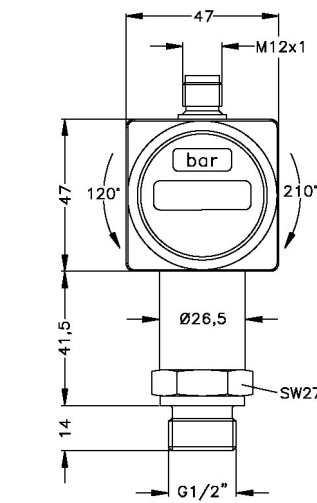


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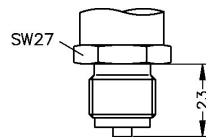
Digital Pressure Gauge

Technical Data

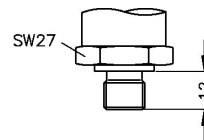
Mechanical connections (dimensions in mm)



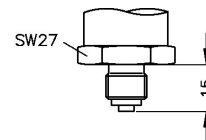
G1/2" DIN 3852
M20x1.5



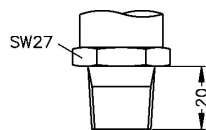
G1/2" EN 837
M20x1.5



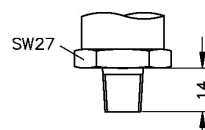
G1/4" DIN 3852
M10x1; M12x1; M12x1.5
(from 0.6 up to 100 bar)



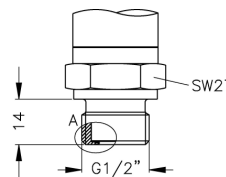
G1/4" EN 837



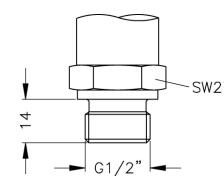
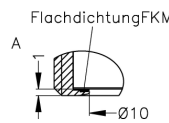
1/2" NPT



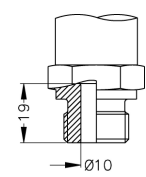
1/4" NPT



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

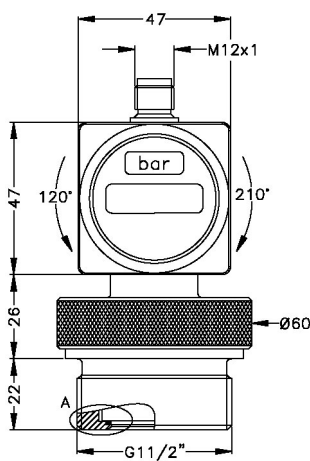


G1/2" open port (DIN 3852);
M20x1.5

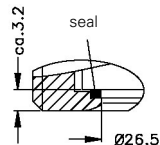


⇒ Ex-protection: total length increases by 10 mm!

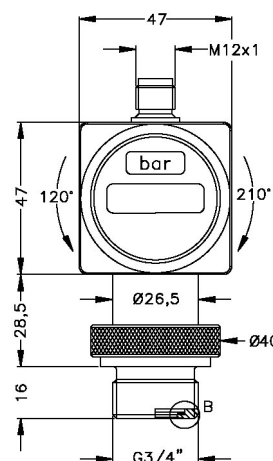
standard for P_n from 0.16 up to 0.4 bar gauge



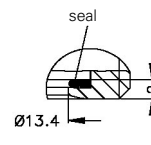
G1 1/2" flush (DIN 3852)
M20 x 1,5



optionally for P_n from 0.6 up to 60 bar gauge



G3/4" flush (DIN 3852)⁸



- ⇒ 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!

⁸ nominal pressure ranges > 25 bar with Ø 40 and spanner flat SW 34 (without knurled ring)

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

Ordering code DM 201

DM 201

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

Pressure									
gauge in bar	7	8	2						
gauge in mH ₂ O	7	8	E						
absolute in bar	7	8	3						
Input									
[mH ₂ O]	[bar]								
1,6	0,16	1		1	6	0	0		
2,5	0,25	1		2	5	0	0		
4	0,40	1		4	0	0	0		
6	0,60			6	0	0	0		
10	1,0			1	0	0	1		
16	1,6			1	6	0	1		
25	2,5			2	5	0	1		
40	4,0			4	0	0	1		
60	6,0			6	0	0	1		
100	10			1	0	0	2		
160	16			1	6	0	2		
250	25			2	5	0	2		
400	40			4	0	0	2		
600	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		
600				6	0	0	3		
-1 ... 0				X	1	0	2		
customer				9	9	9	9		on request
Analogue output									
without				0					
4 ... 20 mA / 2-wire				1					
0 ... 10 V / 3-wire				3					
4 ... 20 mA / 3-wire, adjustable				7					
Intrinsic safety 4 ... 20 mA / 2-wire				E					
customer				9					on request
Accuracy									
0,5 %				5					
customer				9					on request
Electrical connection									
M12x1 (5-pin) / plastic version				N	0	0			
M12x1 (5-pin) / metal version				N	1	0			
Male and female plug ISO 4400				1	0	0			
Cable gland incl. cable				4	0	0			
customer				9	9	9			on request
Mechanical connection									
G1/2" DIN 3852				1	0	0			
G1/2" EN 837				2	0	0			
G1/4" DIN 3852				3	0	0			
G1/4" EN 837				4	0	0			
G1/2" DIN 3852 with flush sensor				F	0	0			
G3/4" DIN 3852 with flush sensor				K	0	0			
G1 1/2" DIN 3852 with flush sensor				M	0	0			
G1/2" DIN 3852 open pressure port				H	0	0			
1/2" NPT				N	0	0			
1/4" NPT				N	4	0			
customer				9	9	9			on request
Seals									
for P _N < 100 bar	FKM			1					
for P _N ≥ 100 bar	NBR			5					
customer				9					on request
Pressure port									
Stainless steel 1.4571 (316Ti)				1					
PVC				A					
PVDF				B					
customer				9					on request
Diaphragm									
Ceramics Al ₂ O ₃ 96%				2					
customer				9					on request
Special version									
standard				0	0	0			
oxygen application				0	0	7			
customer				9	9	9			on request

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 connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible
⁴ different cable types and lengths deliverable, standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube
⁵ G1/2" flush up to 25 bar and G3/4" flush up to 60 bar possible; nominal pressure abs. on request
⁶ PVC only with G3/4" DIN 3852 with flush sensor (0,6 bar ≤ P_N ≤ 25 bar)
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 ≤ P_N ≤ 25 bar)
⁸ oxygen application possible up to 160 bar; impossible with flush pressure ports

