



DM 200

Digital Pressure Gauge

- ▶ piezoresistive stainless steel sensor
- ▶ optional:
 - analogue output
 - Ex-protection (for 2-wire)
 - flush diaphragm
- ▶ nominal pressure range
from 0 ... 100 mbar
up to 0 ... 600 bar

Description

The digital pressure gauge is suitable for universal usage. Permissible media are gases or liquids, compatible with the media wetted parts; with flush diaphragm clean fluids and viscous or pasty media are possible.

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

- ▶ pneumatics / hydraulics
- ▶ machine and plant engineering
- ▶ test benches
- ▶ environmental 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

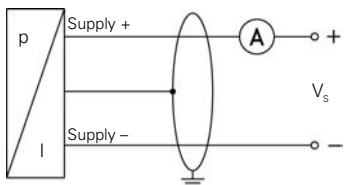
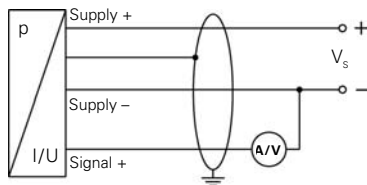
Characteristics



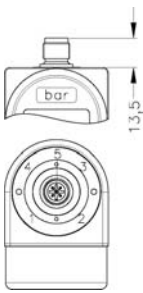
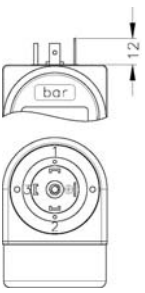
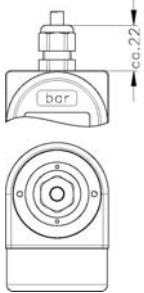
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Digital Pressure Gauge

Input pressure range ¹																
Nominal pressure gauge / abs. [bar]	-1 ... 0	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	
Level gauge [mH ₂ O]	-	1	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	
Permissible overpressure [bar]	3	1	1	1	1	3	3	6	6	20	20	60	60	60	100	
Nominal pressure gauge / abs. [bar]	60		100			160			250			400			600	
Permissible overpressure [bar]	140		340			340			600			600			1000	
¹ nominal pressure range abs. from 0.1 bar; measurement for pressure ranges ≥ 60 bar starts with ambient pressure																
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: < 5 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: < 5 ms															
3-wire current signal	4 ... 20 mA / V _S = 19 ... 30 V _{DC} adjustable (turn-down of span 1:5) ² permissible load: R _{max} = 500 Ω response time: < 1 s															
3-wire voltage signal	0 ... 10 V / V _S = 15 ... 36 V _{DC} permissible load: R _{min} = 10 kΩ response time: < 5 ms															
without analogue output	V _S = 15 ... 36 V _{DC}															
Accuracy									IEC 60770 ³			BFSL				
	standard: nominal pressure > 0.4 bar:								≤ ± 0.35 % FSO			≤ ± 0.175 % FSO				
	nominal pressure ≤ 0.4 bar:								≤ ± 0.50 % FSO			≤ ± 0.250 % FSO				
	option: nominal pressure > 0.4 bar:								≤ ± 0.25 % FSO			≤ ± 0.125 % FSO				
Measuring rate of display	approx. 10/s															
² with turn-down of span the analogue signal is adjusted automatically to the new measuring range																
³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)																
Thermal errors (offset and span) / Permissible temperatures																
Nominal pressure P _N [bar]	-1 ... 0		0.1			≤ 0.25			0.4			≤ 1			> 1	
Tolerance band [% FSO]	≤ ± 0.75		≤ ± 2			≤ ± 1.5			≤ ± 1			≤ ± 1			≤ ± 0.75	
TC, average [% FSO / 10 K]	± 0.07		± 0.3			± 0.2			± 0.14			± 0.1			± 0.07	
in compensated range [°C]	0 ... 70		0 ... 50													
Permissible temperatures	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 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															
Mechanical stability																
Vibration	5 g RMS (20 ... 2000 Hz)															
Shock	100 g / 11 msec.															
Materials																
Pressure port	stainless steel 1.4571 (316Ti)															
Housing	stainless steel 1.4301 (304)															
Display housing	PA 6.6, polycarbonate															
Seals (media wetted)	standard: P _N ≤ 40 bar: FKM / P _N > 40 bar: NBR option: welded version for pressure ports according to EN 837 with pressure ranges P _N between 0.25 bar and 40 bar; others on request															
Diaphragm	stainless steel 1.4435 (316L)															
Media wetted parts	pressure port, seals, diaphragm															
Explosion protection (for 2-wire current signal with Ex-protection)																
Approval AX11-DM 200	zone (0) 1: II (1) 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															

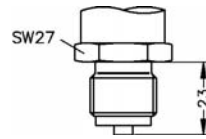
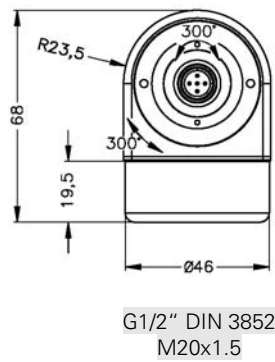
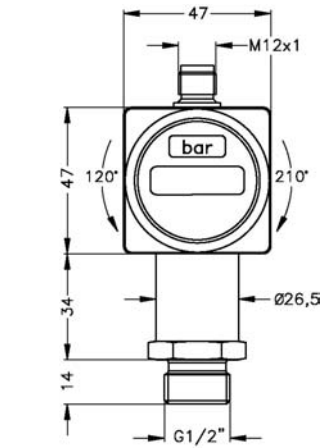
Miscellaneous	
Display	4-digit, red 7-segment-LED display, digit height 7 mm, range of indication -1999 ... +9999; accuracy 0.1 % ± 1 digit; digital damping 0.3 ... 30 sec (programmable); measured value update 0.0 ... 10 sec (programmable)
Current consumption	2-wire signal output current: max. 25 mA 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 ⁴
Weight	min. 160 (depending on mechanical connection)
Operational life	> 100 x 10 ⁶ cycles
⁴ Pressure switches are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges ≤ 1 bar.	

Wiring diagrams	
2-wire-system (current)	3-wire-system (current / voltage)
	

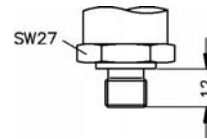
Pin configuration				
Electrical connection	M12x1 plastic (5-pin)	M12x1 metal (5-pin)	ISO 4400	cable colours (DIN 47100)
Supply +	1	1	1	white
Supply -	3	3	2	brown
Signal + (only 3-wire)	2	2	3	green
Ground	via pressure port	plug housing / pressure port	ground contact	yellow / green (shield)

Electrical connection (dimensions in mm)		
		
M12x1 (5-pin)	ISO 4400	cable gland ⁵
⁵ different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube)		

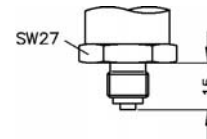
Mechanical connections (dimensions in mm)



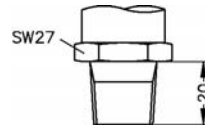
G1/2" EN 837
M20x1.5



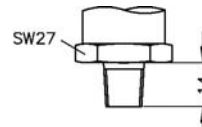
G1/4" DIN 3852
M10x1; M12x1; M12x1.5
(only up to 100 bar)



G1/4" EN 837

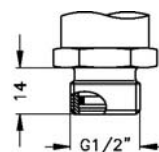


1/2" NPT

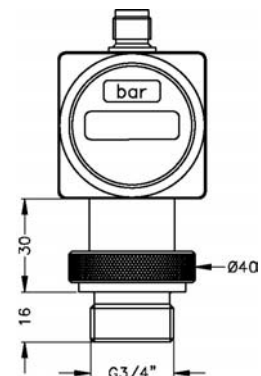


1/4" NPT

Optionally for P_N from 0.1 up to 40 bar



G1/2" flush DIN 3852
M20x1.5



G3/4" flush DIN 3852
(nominal pressure abs. on request)

- ⇒ With pressure ranges $P_N > 40$ bar total length increases by 14 mm!
- ⇒ With Ex-protection total length increases by 20 mm

Ordering code DM 200

DM 200[illegible]

¹ from 60 bar: measurement starts with ambient pressure

² with connector ISO 4400 and output 2-wire version only max. 1 contact possible; with 3-wire version no contact possible

³ different cable types and lengths deliverable, standard: 2 m PVC cable without ventilation tube, optionally cable with ventilation tube

⁴ not possible for nominal pressure $P_N > 40$ bar; also not possible for vacuum ranges: for G3/4" flush nominal pressure abs. on request

⁵ welded version only with pressure ports according to EN 837: not available with pressure ranges ≤ 0.16 bar and ≥ 40 bar