DMP 321

Industrial Pressure Transmitter



Stainless Steel Sensor

accuracy according to IEC 61298-2:
standard: 0.25 % FSO
option: 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
3-wire: 0 … 20 mA / 0 … 10 V
others on request

Special characteristics

- perfect thermal behaviour
- excellent long-term stability
- compact design

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- welded pressure sensor
- customer specific versions

The pressure transmitter DMP 321 is the consistent further development of our in many applications approved DMP 331. It shows an improved signal behaviour and sets new standards in the industrial class.

Its metallic diaphragm made of stainless steel (1.4435 / 316L) offers a good corrosion resistance in many industrial processes.

The modular device concept allows to combine different pressure ranges with a variety of electrical and mechanical connections. Thus, a diversity of variations is created, meeting almost all requirements in industrial applications.

Preferred areas of use are

- Plant and machine engineering
- Environmental engineering
- Energy industry
- Mobile hydraulics

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Input pressure range												
Nominal pressure gauge	[bar]	-1…0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure absolute	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge / absolute	[bar]	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	40	80	80	105	210	600	600	1000	1000	1000
Burst pressure ≥	[bar]	50	120	120	210	420	1000	1000	1250	1250	1800
Vacuum resistance		p_N ≥ 1 bar: unlimited vacuum resistance p_N < 1 bar: on request									

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 10 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 12 ... 28 V_{DC}
Options 3-wire	3-wire: 0 ... 20 mA / V_S = 14 ... 30 V_{DC} 0 ... 10 V / V_S = 14 ... 30 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.25 % FSO option: ≤ ± 0.1 % FSO
Permissible load	current 2-wire: $R_{max} = [(V_S – V_{S\ min}) / 0.02\ A]\ \Omega$ current 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec
[1] accuracy according to IEC 61298-2 – limit point adjustment (non-linearity, hysteresis, repeatability)	
Thermal effects (offset and span)	
Tolerance band	≤ ± 0.75 % FSO
in compensated range	-20 ... 85 °C
Permissible temperatures	
Medium	-40 ... 125 °C
Electronics / environment	-40 ... 85 °C
Storage	-40 ... 100 °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	20 g RMS / 10 ... 2000 Hz — according to DIN EN 60068-2-6
Shock	500 g / 1 msec half sine — according to DIN EN 60068-2-27
Materials	
Pressure port	stainless steel 1.4404 (316 L)
Housing	stainless steel 1.4404 (316 L)
Option compact field housing	stainless steel 1.4301 (304) cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seals	standard: FKM options: EPDM (for p_N ≤ 160 bar) welded version [2] (for p_N ≤ 40 bar) — others on request
Diaphragm	stainless steel 1.4435 (316 L)
Media wetted parts	pressure port, seals, diaphragm
[2] welded version only with pressure ports according to EN 837 and NPT, p_N ≤ 40 bar	

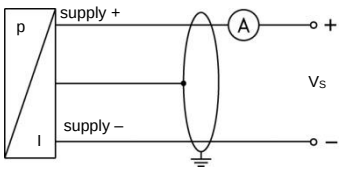
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approvals DX19-DMP 321	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da
Safety technical maximum values	U_i = 28 V_{DC}, I_i = 93 mA, P_i = 660 mW, C_i ≈ 0 nF, L_i ≈ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-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	
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any [3]
Operational life	100 million load cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) [4]
ATEX Directive	2014/34/EU

[3] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges p_N ≤ 1 bar.

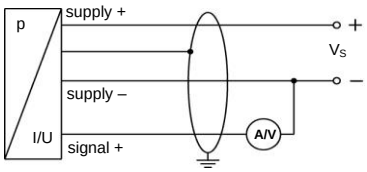
[4] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

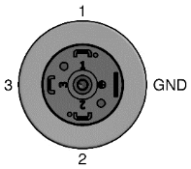
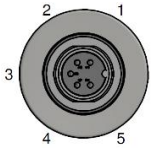
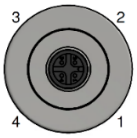
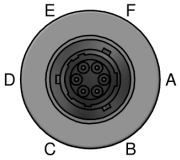
2-wire-system (current)

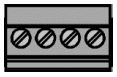


3-wire-system (current / voltage)

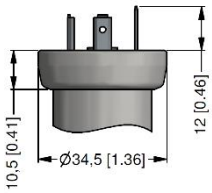


Pin configuration

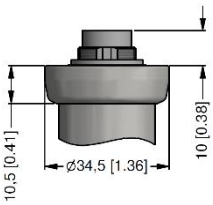
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	Bayonet MIL-C-26482 (10-6)	
					
				2-wire	3-wire
Supply +	1	3	1	A	A
Supply –	2	4	2	B	D
Signal + (for 3-wire)	3	1	3	-	B
Shield	ground pin ⏚	5	4	pressure port	

Electrical connection	compact field housing	cable colours (IEC 60757)
		
	V_{S+} V_{S-} S+ GND	
Supply +	V_S+	WH (white)
Supply –	V_S-	BN (brown)
Signal + (for 3-wire)	S+	GN (green)
Shield	GND	GNYE (green-yellow)

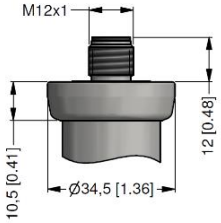
Electrical connections (dimensions mm / in)



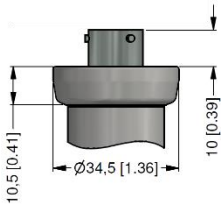
ISO 4400
(IP 65)



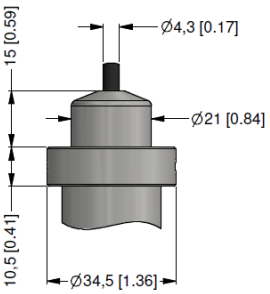
Binder series 723, 5-pin
(IP 67)



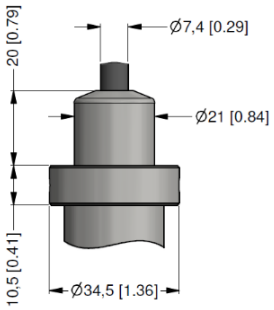
M12x1, 4-pin
(IP 67)



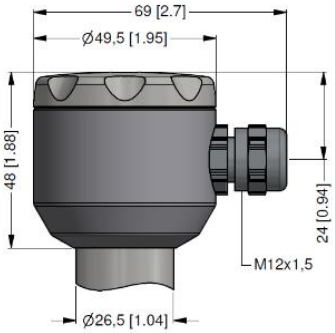
Bayonet MIL-C-26482 (10-6)
(IP 67)



cable outlet with PVC cable
(IP 67) [5]



cable outlet, cable with
ventilation tube (IP 68) [6]

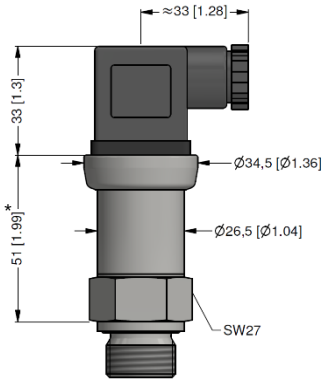


compact field housing
(IP 67)

⇨ **universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request**

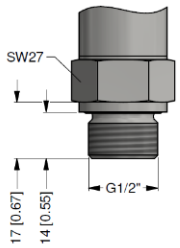
[5] *standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)*
[6] *different cable types and lengths available, permissible temperature depends on kind of cable*

Dimensions (mm / in)

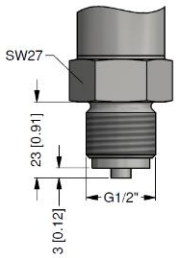


* for nominal pressure p_N > 60 bar increases the length of devices by 9 mm;
with electrical connection Bayonet MIL-C-26482 (10-6) increases the length of devices by 5 mm additionally

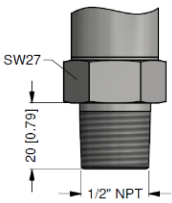
Mechanical connections (dimensions mm / in)



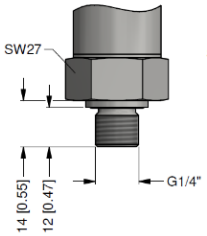
G1/2" DIN 3852



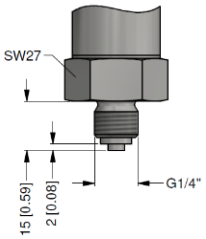
G1/2" EN 837



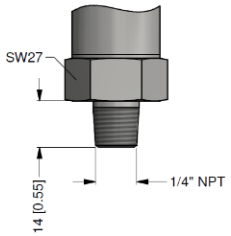
1/2" NPT



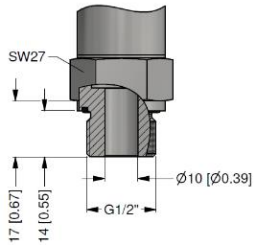
G1/4" DIN 3852



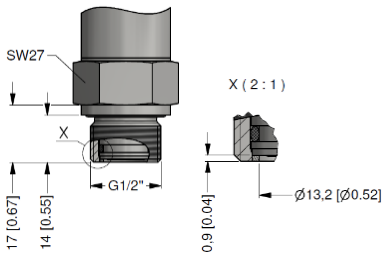
G1/4" EN 837



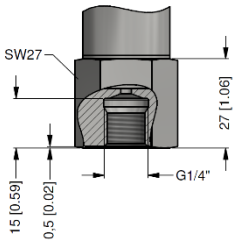
1/4" NPT



G1/2" open port DIN 3852
(p_N ≤ 40 bar)



G1/2" flush DIN 3852
(p_N ≤ 40 bar)



G1/4" DIN 3852
internal thread

⇨ **metric threads and other versions on request**

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BD|SENSORS pressure measurement

Ordering code DMP 321

DMP 321 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure		
gauge	1 1 5	
absolute [1]	1 1 6	
Input [bar]		
0.10 [1]	1 0 0 0	
0.16 [1]	1 6 0 0	
0.25 [1]	2 5 0 0	
0.40	4 0 0 0	
0.60	6 0 0 0	
1.0	1 0 0 1	
1.6	1 6 0 1	
2.5	2 5 0 1	
4.0	4 0 0 1	
6.0	6 0 0 1	
10	1 0 0 2	
16	1 6 0 2	
25	2 5 0 2	
40	4 0 0 2	
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	consult
Output		
4 … 20 mA / 2-wire	1	
0 … 20 mA / 3-wire	2	
0 … 10 V / 3-wire	3	
intrinsic safety 4 … 20 mA / 2-wire	E	
customer	9	consult
Accuracy		
standard: 0.25 % FSO	2	
option: 0.10 % FSO	1	
customer	9	consult
Electrical connection		
male and female plug ISO 4400	1 0 0	
male plug Binder series 723 (5-pin)	2 0 0	
cable outlet with PVC cable (IP67) [2]	T A 0	
cable outlet, cable with ventilation tube (IP68) [3]	T R 0	
male plug M12x1 (4-pin) / metal	M 1 0	
Bayonet MIL-C-26482 (10-6); 2 wire	B G 0	
Bayonet MIL-C-26482 (10-6); 3 wire	B G 4	
compact field housing stainless steel 1.4301 (304)	8 5 0	
customer	9 9 9	consult
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" DIN 3852, internal thread	J 0 0	
G1/4" EN 837	4 0 0	
G1/2" DIN 3852 with flush sensor [4]	F 0 0	
G1/2" DIN 3852 open pressure port [4]	H 0 0	
1/2" NPT	N 0 0	
1/4" NPT	N 4 0	
customer	9 9 9	consult
Seal		
FKM	1	
EPDM	3	
without (welded version) [5]	2	
customer	9	consult
Special version		
standard	0 0 0	
customer	9 9 9	consult

[1] absolute pressure possible from 0.4 bar
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] not possible for nominal pressure $p_N > 40$ bar
[5] welded version only with pressure ports according to EN 837 and NPT, possible for $p_N \leq 40$ bar

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