DMP 331

Industrial Pressure Transmitter for Low Pressure

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 / 0.1 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 60 bar

Output signals

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

Special characteristic

- perfect thermal behaviour
- excellent long term stability
- pressure port
  G 1/2" flush from 100 mbar

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- SIL 2-according to
  IEC 61508 / IEC 61511
- pressure sensor welded
- customer specific versions

The pressure transmitter DMP 331 can be used in all industrial areas when the medium is compatible with stainless steel 1.4404 (316 L) or 1.4435 (316 L). Additional are different elastomer seals as well as a helium tested welded version available.

The modulare concept of the device allows to combine different stainless steel sensors and electronic modules with a variety of electrical and mechanical versions.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 (water - sewage - recycling)
- Energy Industry

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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
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60	1	1.6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15

Nominal pressure gauge / abs.	[bar]	2.5	4	6	10	16	25	40	60
Overpressure	[bar]	10	20	40	40	80	80	105	105
Burst pressure ≥	[bar]	15	25	50	50	120	120	210	210
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 = 8 ... 32 V_{DC}	SIL-version: V_S = 14 … 28 V_{DC}	
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 10 ... 28 V_{DC}	SIL-version: V_S = 14 … 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: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.25 % FSO option 2: for all nominal pressure: ≤ ± 0.1 % FSO		
Permissible load	current 2-wire: $R_{max} = [(V_S – V_S \text{ min}) / 0.02 \text{ A}]$ Ω 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 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)			

Thermal effects (Offset and Span)			
Nominal pressure P_N [bar]	-1 … 0	< 0.40	≥ 0.40
Tolerance band [% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated range [°C]	-20 ... 85	0 ... 70	-20 … 85

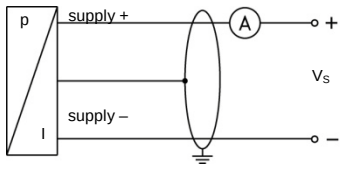
Permissible temperatures		
Permissible temperatures	medium:	-40 ... 125 °C
	electronics / environment:	-40 ... 85 °C
	storage:	-40 ... 100 °C
Electrical protection		
Short-circuit protection	permanent	
Reverse polarity protection	no damage, but also no function	
Electromagnetic compatibility	emission and immunity according to EN 61326	
Mechanical stability		
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6
Shock	500 g / 1 msec	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 1.4305 (303), cable gland brass, nickel plated	others on request
Seals (media wetted)	standard: FKM options: EPDM welded version [2]	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		
Explosion protection (only for 4 … 20 mA / 2-wire)		
Approvals DX19-DMP 331	**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 T 85°C Da	
Safety technical maximum values	U_i = 28 V, 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: -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: 1µH/m	

Miscellaneous			
Option SIL[3] 2	according to IEC 61508 / IEC 61511		
Current consumption	signal output current: max. 25 mA	signal output voltage:	max. 7 mA
Weight	approx. 200 g		
Installation position	any[4]		
Operational life	> 100 x 10^6 pressure cycles		
CE-conformity	EMC Directive: 2004/108/EC		
ATEX Directive	94/9/EG		

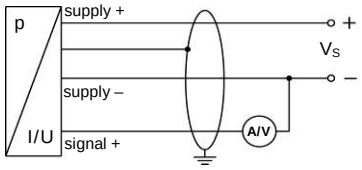
[3] only for 4 … 20 mA / 2-wire, not in combination with the accuracy 0.1%
[4] Pressure transmitters are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges $P_N \leq 1$ bar.

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

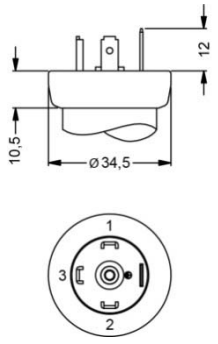


Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	1	IN +	wh (white)
Supply –	2	4	2	IN -	bn (brown)
Signal + (for 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin	5	4	⏚	ye/gn (yellow / green)

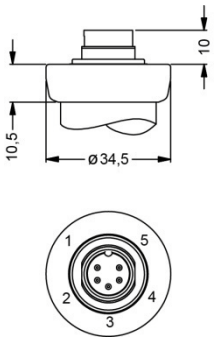
Electrical connections (dimensions in mm)

standard

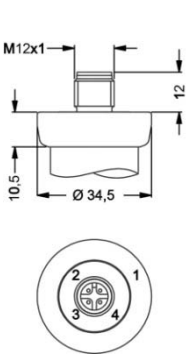


ISO 4400
(IP 65)

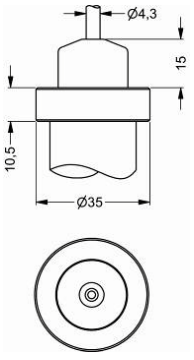
option



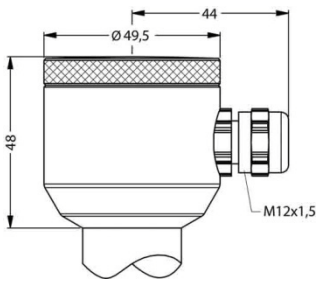
Binder Series 723 5-pin
(IP 67)



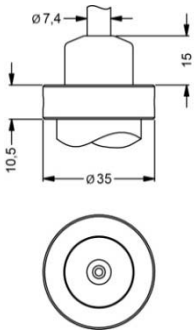
M12x1 4-pin
(IP 67)



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



compact field housing
(IP 67)



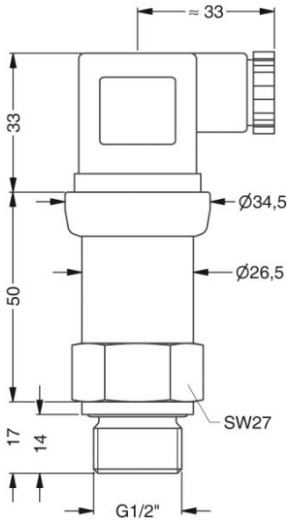
cable outlet, cable with ventilation tube
(IP 68) [6]

⇨ **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

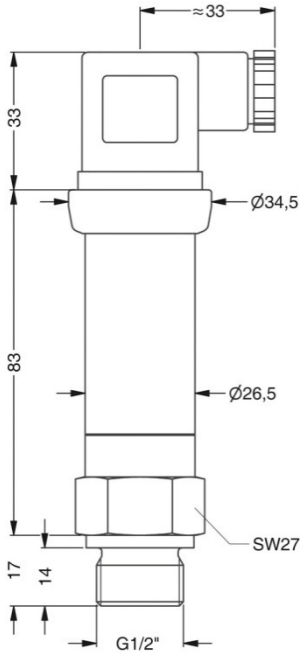
Mechanical connections (dimensions in mm)

standard



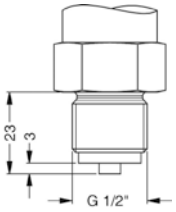
G1/2" DIN 3852
with ISO 4400

SIL- and SIL-IS-version

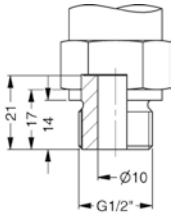


G1/2" DIN 3852
with ISO 4400

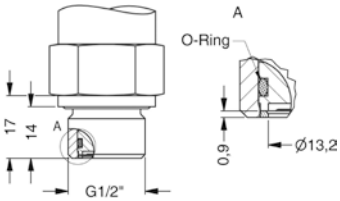
option



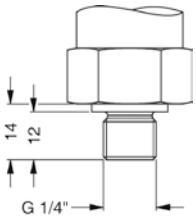
G1/2" EN 837



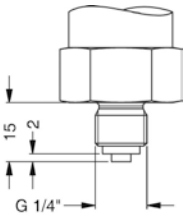
G1/2" open port



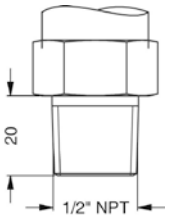
G1/2" DIN 3852
with flush sensor



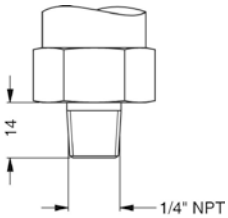
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

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

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BD|SENSORS pressure measurement

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Ordering code DMP 331

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Pressure																						
gauge		1	1	0																		
absolute	1	1	1	1																		
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														
-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													
SIL2 4 … 20 mA / 2-wire									1S													
SIL2 with intrinsic safety 4 … 20 mA / 2-wire									ES													
customer									9													consult
Accuracy																						
standard for $P_N \geq 0.4$ bar	0.35 %									3												
standard for $P_N < 0.4$ bar	0.5 %									5												
option 1 for $P_N \geq 0.4$ bar	0.25 %									2												
option 2	0.1 %	2								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	3										T	A	0									
Cable outlet	4										T	R	0									
Male plug M12x1 (4-pin) / metal											M	1	0									
Compact field housing stainless steel 1.4305											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" EN 837														4	0	0						
G1/2" DIN 3852 with flush sensor														F	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						consult
Seals																						
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] not in combination with SIL

[3] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 … 70°C), others on request

[4] cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

[5] welded version only with pressure ports according to EN 837

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