



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

Industrial
Pressure Transmitter

DMP 331

Nominal pressure

from 0 ... 100 mbar
up to 0 ... 40 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
- ▶ **pressure port**
G 1/2" flush from 100 mbar on

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 modular 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



Input pressure range									
Nominal pressure gauge / abs.	[bar]	-1...0	0.10	0.16	0.25	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	
Overpressure	[bar]	10	20	40	40	80	80	105	
Burst pressure ≥	[bar]	15	25	50	50	120	120	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}								
Option IS-protection	2-wire: 4 ... 20 mA / V _S = 10 ... 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 min) / 0.02] 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 NBR 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)									
Approval DX19-DMP 331	IBExU 10 ATEX 1068 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1 D Ex iaD 20 T85 °C, IP6x in preparation								
Safety technical maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μH								
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: 1 μH/m								

DMP 331

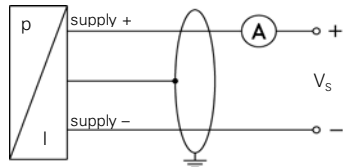
Industrial Pressure Transmitter

Technical Data

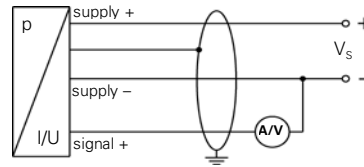
Miscellaneous			
Option SIL 2	according to IEC 61508 / IEC 61511		
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 5 mA	
Weight	approx. 140 g		
Installation position	any ³		
Operational life	> 100 x 10 ⁶ pressure cycles		
CE-conformity	EMC Directive: 2004/108/EC		
³ 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 $P_N \leq 1$ bar.			

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

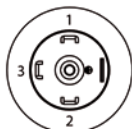
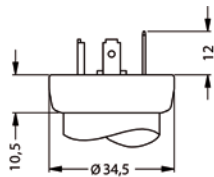


Pin configuration

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		gn/ye (green / yellow)

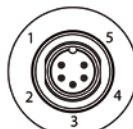
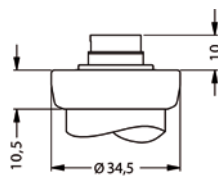
Electrical connections (dimensions in mm)

standard

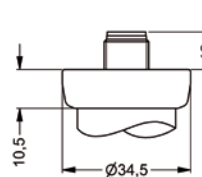


ISO 4400
(IP 65)

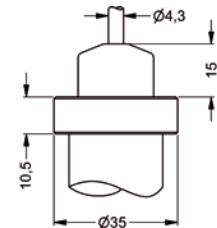
option



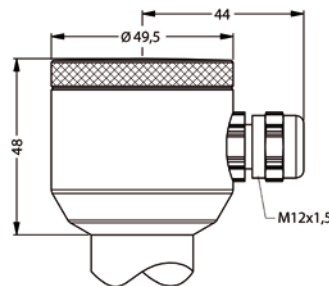
Binder Series 723 5-pin
(IP 67)



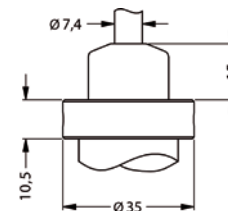
M12x1 4-pin
(IP 67)



cable outlet with PVC cable
(IP 67)⁴



compact field housing
(IP 67)



cable outlet, cable with ventilation tube
(IP 68)⁵

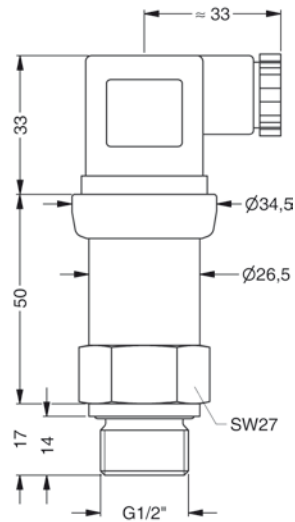
⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

⁵ different cable types and lengths available, permissible temperature depends on kind of cable

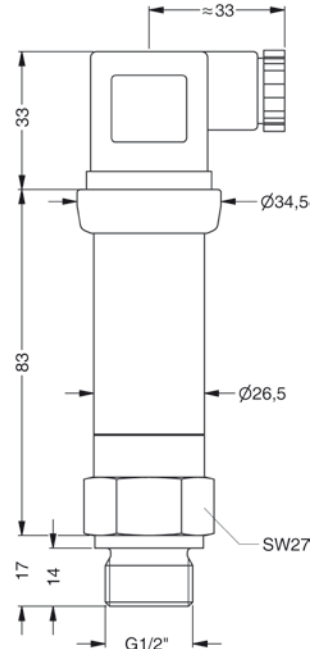
Mechanical connections (dimensions in mm)

standard for accuracy 0.35 / 0.25 %



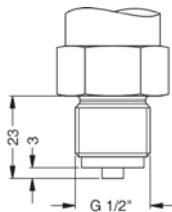
G1/2" DIN 3852
with ISO 4400

standard for accuracy 0.1 %;
SIL- and SIL-IS-version ⁶

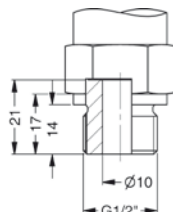


G1/2" DIN 3852
with ISO 4400

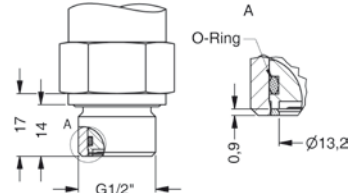
option



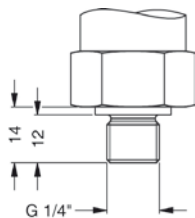
G1/2" EN 837



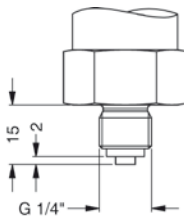
G1/2" open port



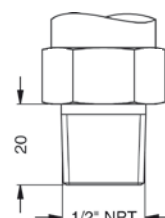
G1/2" DIN 3852
with flush sensor



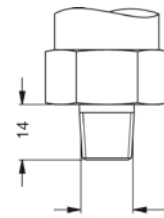
G1/4" DIN 3852



G1/4" EN 837



1/2" NPT



1/4" NPT

⇒ metric threads and other versions on request

⁶ not in combination with the accuracy 0.1 %

Ordering code DMP 331
DMP 331
 - - - - - - -

Pressure									
	gauge	1	1	0					
	absolute	1	1	1					
Input [bar]									
	0.10	1	0	0	0				
	0.16	1	6	0	0				
	0.25	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				
	-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 ¹				1S				
	SIL2 with intrinsic safety 4 ... 20 mA / 2-wire ¹				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 %			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 ²				T	A	0		
	Cable outlet ³				T	R	0		
	Male plug M12x1 (4-pin) / metal				M	1	0		
	Compact field housing				8	5	0		
	stainless steel 1.4305								
	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				F	0	0		
	with flush sensor								
	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		
	NBR						5		
	without (welded version) ⁴						2		
	customer						9		consult
Special version									
	standard						0	0	0
	customer						9	9	9
									consult

¹ not in combination with the accuracy 0.1%² standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C), others on request³ cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable⁴ welded version only with pressure ports according to EN 837