



# **DMP 331P**

# Industrial **Pressure Transmitter**

**Process Connections With** Flush Welded Stainless Steel Diaphragm

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

### **Nominal pressure**

from 0 ... 100 mbar up to 0 ... 40 bar

### **Output signals**

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

### Special characteristics

- hygienic version
- diaphragm with low surface roughness
- CIP / SIP cleaning up to 150 °C
- vacuum resistant

### **Optional versions**

- IS-version Ex ia = intrinsically safe for gases and dust
- SIL<sub>2</sub> according to IEC 61508 / IEC 61511
- Diaphragm in Hastelloy® or Tantalum
- cooling element for media temperatures up to 300 °C

The pressure transmitter DMP 331P designed for use in the food / beverage and pharmaceutical industry. The compact design with hygienic versions makes it possible to achieve an outstanding performance in terms of accuracy, temperature behavior and long term stability.

The modular construction concept allows a combination of various process connections with different filling fluids and a cooling element. Several electrical connections complete the profile of DMP 331P.

### Preferred areas of use are



Food and Beverage



Pharmaceutical Industry

### Material and test certificates

- inspection certificate 3.1 according to EN 10204
- test report 2.2 according to EN 10204























## Industrial Pressure Transmitter

Input pressure range 1									
Nominal pressure gauge	[bar]	-10	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	
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 $P_N \le 1$ bar: on request									
<sup>1</sup> consider the pressure resista	nce of fitt	ing and clamps	3						
Output signal / Supply									

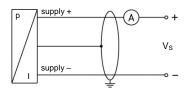
P <sub>N</sub> ≤ 1 bar: on request						
<sup>1</sup> consider the pressure resistance of fit	ting and clamps					
Output signal / Supply						
Standard	2-wire: 4 20 mA / V <sub>S</sub> = 8	32 $V_{DC}$ SIL-version: $V_{S}$ =	: 14 28 V <sub>DC</sub>			
Option IS-protection	2-wire: 4 20 mA / V <sub>S</sub> = 10	28 V <sub>DC</sub> SIL-version: V <sub>S</sub> =	: 14 28 V <sub>DC</sub>			
Options 3-wire	3-wire: 0 20 mA / V <sub>S</sub> = 14 0 10 V / V <sub>S</sub> = 14	30 V <sub>DC</sub>				
Performance						
Accuracy <sup>2</sup>	standard: nominal pressure < 0.4 bar: $\leq \pm 0.5$ % FSO nominal pressure $\geq 0.4$ bar: $\leq \pm 0.35$ % FSO option: nominal pressure $\geq 0.4$ bar: $\leq \pm 0.25$ % FSO					
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 \text{ A}] \Omega$ current 3-wire: $R_{max} = 500 \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$					
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ					
Long term stability	$\leq$ ± 0.1 % FSO / year at reference	conditions				
Response time	2-wire: < 10 msec	3-wire: ≤ 3 msec				
<sup>2</sup> accuracy according to IEC 60770 – lin	mit point adjustment (non-linearity, hyster	esis, repeatability)				
Thermal effects (Offset and Spa	n) <sup>3</sup> / Permissible temperatures					
Nominal pressure P <sub>N</sub> [bar		< 0.40	≥ 0.40			
Tolerance band [% FSO	] ≤ ± 0.75	≤ ± 1,5	≤ ± 0.75			
in compensated range [°C	4	0 50	-20 85			
Permissible temperatures <sup>4</sup> medium: -40 125 °C for filling fluid silicone oil -10 125 °C for filling fluid food grade oil electronics / environment: -40 85 °C storage: -40 100 °C						
Permissible temperature medium	filling fluid silicone oil	overpressure: -40 300 °C	vacuum: -40 150 °C <sup>5</sup>			
for cooling element 300°C	filling fluid food grade oil	overpressure: -10 250 °C	vacuum: -10 150 °C <sup>5</sup>			
$^{4}$ max. temperature of the medium for r $^{5}$ also for $P_{abs}$ ≤ 1 bar	ence thermal effects for offset and span d nominal pressure gauge > 0 bar: 150 °C fo	epending on installation position and fil or 60 minutes with a max. environment	ling conditions. al temperature of 50 °C			
Electrical protection	normanant					
Short-circuit protection	permanent					
Reverse polarity protection  Electromagnetic compatibility	no damage, but also no function emission and immunity according to EN 61326					
Mechanical stability						
Vibration						
according to DIN EN 60068-2-6 Shock	G 1/2": 20 g RMS (25 2000 Hz	z) others: 10 g RMS (25 2	000 Hz)			
according to DIN EN 60068-2-27	G 1/2": 500 g / 1 msec others: 100 g / 1 msec					
Filling fluids						
Standard	silicone oil					
Options	food grade oil, compliant with 210 (Mobil SHC Cibus 32; Category C	CFR178.3570 Code: H1; NSF Registration No.: 1	41500) others on request			
Materials						
Pressure port	stainless steel 1.4435 (316 L)	others on request				
Housing	stainless steel 1.4404 (316 L)					
Option compact field housing	stainless steel 1.4305 (303), cable	e gland brass, nickel plated	others on request			
Seals (media wetted) Standard Optional	FKM (recommended for medium temperatures ≤ 200 °C) FFKM (recommended for medium temperatures > 200 °C) Clamp, dairy pipe, Varivent <sup>®</sup> : without					
Diaphragm Standard Optional Media wetted parts	stainless steel 1.4435 (316 L) Hastelloy® C-276 (2.4819) pressure port, seal, diaphragm		Tantalum on request			

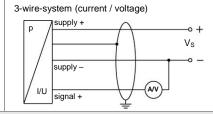
Explosion protection (only for 4 20 mA / 2-wire)						
Approvals	IBExU 10 ATEX 1068 X / IECEx IBE 12.0027X					
DX 19-DMP 331P	zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T 85°C Da					
Safety technical maximum values	$U_i=28$ V, $I_i=93$ mA, $P_i=660$ mW, $C_i\approx0$ nF, $L_i\approx0$ $\mu$ H, the supply connections have an inner capacity of max. 27 nF to the housing					
Ambient temperature range	in zone 0: -20 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar					
	in zone 1 or higher: -20 70 °C					
Connecting cables	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m					
(by factory)	cable inductance: signal line/shield also signal line/signal line: 1μH/m					
Miscellaneous						
Option SIL <sup>6</sup> 2	according to IEC 61508 / IEC 61511					
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA					
Weight	min. 200 g (depending on process connection)					
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $P_N \le 2$ bar have to be specified in the order)					
Operational life	> 100 x 10 <sup>6</sup> pressure cycles					
CE-conformity	EMC Directive: 2014/30/EU					
ATEX Directive	2014/34/EU					
6 only for 4 20 mA /2 wire	1					

<sup>6</sup> only for 4 ... 20 mA / 2-wire

### Wiring diagrams

2-wire-system (current)





Pin configuration						
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colour (IEC 60757)	
Supply +	1	3	1	IN +	wh (white)	
Supply –	2	4	2	IN -	bn (brown)	
Signal (only 3-wire)	3	1	3	OUT+	gn (green)	
Shield	ground pin	5	4	<u></u>	gnye (green-yellow)	

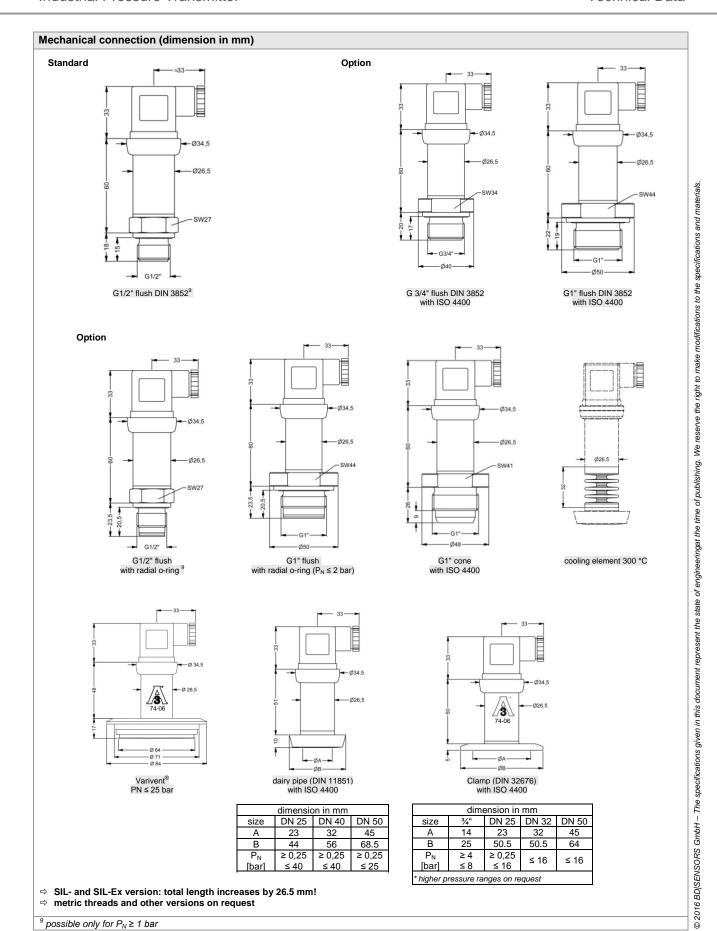
### Electrical connections (dimensions in mm)

# standard option M12x1 SO 4400 (IP 65) Binder Series 723 (IP 67) M12x1 4-pin (IP 67) Cable outlet with PVC cable (IP 67) O7,4 O9,5 O7,4 O9,5 Cable outlet, cable with ventilation tube (IP 68) Compact field housing (IP 67) Cable outlet, cable with ventilation tube (IP 68)

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

<sup>&</sup>lt;sup>7</sup>standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

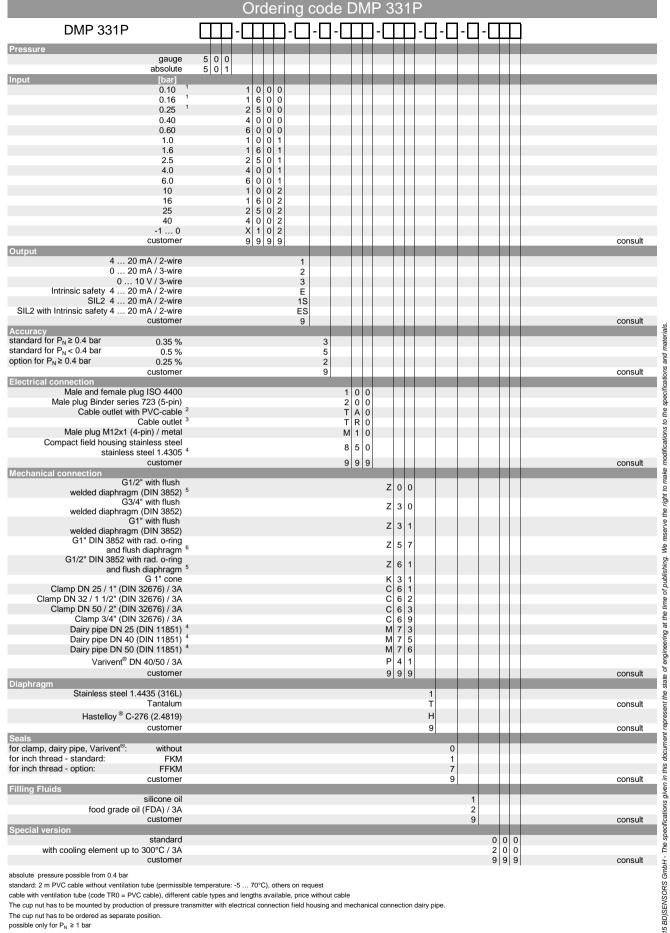
<sup>8</sup> different cable types and lengths available, permissible temperature depends on kind of cable



Tel

Fax





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

The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe.

The cup nut has to be ordered as separate position.

possible only for P<sub>N</sub> ≥ 1 bar

possible only for P<sub>N</sub> ≤ 2 bar

Varivent® is a brand name of GEA Tuchenhagen GmbH, Hastelloy® is a brand name of Haynes International Inc.

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