

Pressure - Temperature - Level - Distance - Control - Indication - Data logging



DMP 331 i  
DMP 333 i  
LMP 331 i

**Precision  
Pressure Transmitter /  
Screw-in transmitter**

**Stainless Steel Sensor**

**accuracy  
according to IEC 60770:  
0.1 % FSO**

DMP 331i DMP 333i LMP 331i

#### **Nominal pressure**

from 0 ... 400 mbar  
up to 0 ... 600 bar

#### **Output signal**

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

#### **Product characteristics**

- ▶ thermal error in compensated range  
-20 ... 80 °C: 0.2 % FSO  
TC 0.02 % FSO / 10K
- ▶ communication interface for  
adjusting of offset, span and  
damping

#### **Optional versions**

- ▶ IS-versions
- ▶ Ex ia = intrinsically safe for  
gases and dusts
- ▶ adjustment of nominal pressure  
gauges (factory-provided)



The precision pressure transmitter DMP 331i and DMP 333i also the precision screw-in transmitter LMP 331i demonstrate the further development of our industrial pressure transmitters.

The signal processing of sensor signal is done by digital electronics with 16-bit analog digital converter. Consequently it is possible to conduct an active compensation and the transmitters with excellent measurements and exceptionally attractive price to offer on the market.

#### **Preferred areas of use are**

##### **DMP 331i / DMP 333i**



Laboratory Techniques



energy production (gas consumption  
and thermal energy measurement)

##### **Preferred areas of use are LMP 331i**



Environmental Engineering  
(water / sewage / recycling)



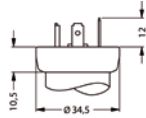
Chemical / petrochemical industry

<b>Pressure ranges DMP 331 i <sup>1</sup></b>								
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7,5	15	25	50	120	210
<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								
<b>Vacuum ranges</b>								
Nominal pressure	[bar]	-0.4 ... 0.4	-1 ... 1	-1 ... 2	-1 ... 4	-1 ... 10		
Overpressure	[bar]	2	5	10	20	40		
Burst pressure	[bar]	3	7.5	15	25	50		
<b>Pressure ranges DMP 333 i <sup>1</sup></b>								
Nominal pressure gauge / absolute	[bar]	60	100	200	400	600		
Overpressure	[bar]	210	210	600	1000	1000		
Burst pressure	[bar]	420	420	1000	1250	1250		
<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								
<b>Pressure ranges LMP 331 i <sup>1</sup></b>								
Nominal pressure gauge / absolute	[bar]	0.4	1	2	4	10	20	40
Level gauge	[mH <sub>2</sub> O]	4	10	20	40	100	200	400
Overpressure	[bar]	2	5	10	20	40	80	105
Burst pressure	[bar]	3	7.5	15	25	80	120	210
<sup>1</sup> On customer request we adjust the device within the turn-down-possibility by software on the required pressure range.								
<b>Output signal / Supply</b>								
Standard	2-wire: 4 ... 20 mA / V <sub>S</sub> = 12 ... 36 V <sub>DC</sub>							
Option IS-protection	2-wire: 4 ... 20 mA / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>							
Options	2-wire: 4 ... 20 mA with communication interface <sup>2</sup> 3-wire: 0 ... 10 V / V <sub>S</sub> = 14 ... 36 V <sub>DC</sub> 0 ... 10 V with communication interface <sup>2</sup>							
<sup>2</sup> only possible with el. connection Binder series 723 (7-pin)								
<b>Performance</b>								
Accuracy performance after turn-down - TD ≤ 1:5 - TD > 1:5	IEC 60770 <sup>3</sup> : ≤ ± 0.1 % FSO no change of accuracy <sup>4</sup> for calculation use the following formula (for nominal pressure ranges ≤ 0.40 bar see note 3): ≤ ± [0.1 + 0.015 x turn-down] % FSO with turn-down = nominal pressure range / adjusted range e.g. with a turn-down of 1:10 following accuracy is calculated: ≤ ± (0.1 + 0.015 x 10) % FSO i.e. accuracy is ≤ ± 0.25 % FSO							
Permissible load	current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S</sub> min) / 0.02 A] Ω voltage 3-wire: R <sub>min</sub> = 10 kΩ							
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ							
Long term stability	≤ ± (0.1 x turn-down) % FSO / year							
Response time	approx. 200 msec							
Adjustability	configuration of following parameters possible (interface / software necessary <sup>5</sup> ): - electronic damping: 0 ... 100 sec - offset: 0 ... 90 % FSO - turn down of span: max. 1:10							
<sup>3</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)								
<sup>4</sup> except nominal pressure ranges ≤ 0.40 bar; for these calculation of accuracy is as follows: ≤ ± (0.1 + 0.02 x turn-down) % FSO e.g. turn-down of 1:3: ≤ ± (0.1 + 0.02 x 3) % FSO i.e. accuracy is ≤ ± 0.16 % FSO								
<sup>5</sup> software, interface, and cable have to be ordered separately (software appropriate for Windows <sup>®</sup> 95, 98, 2000, NT Version 4.0 or higher, and XP)								
<b>Thermal effects (Offset and Span) / Permissible temperatures</b>								
Tolerance band	[% FSO]	≤ ± (0.2 x turn-down) in compensated range -20 ... 80 °C						
TC, average	[% FSO / 10 K]	± (0.02 x turn-down) in compensated range -20 ... 80 °C						
Permissible temperatures	medium: -25 ... 125 °C electronics / environment: -25 ... 85 °C storage: -40 ... 100 °C							
<b>Electrical protection</b>								
Short-circuit protection	permanent							
Reverse polarity protection	no damage, but also no function							
Electromagnetic compatibility	emission and immunity according to EN 61326							

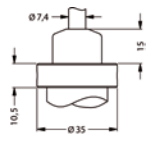
<b>Materials</b>						
Pressure port	stainless steel 1.4404 (316 L)					
Housing	stainless steel 1.4404 (316 L)					
Seals (media wetted)	DMP 331i / LMP 331i: FKM			DMP 333i: NBR		
	optional: welded version <sup>6</sup> ; others on request					
Diaphragm	stainless steel 1.4435 (316L)					
Media wetted parts	pressure port, seals, diaphragm					
<sup>6</sup> welded version only with pressure ports according to EN 837; welded version not available with pressure ranges $\leq 0.16$ bar and $> 40$ bar						
<b>Mechanical stability</b>						
Vibration	10 g RMS (20 ... 2000 Hz)					
Shock	100 g / 11 msec.					
<b>Explosion protection (only for 4 ... 20 mA / 2-wire)</b>						
Approval DX19-DMP 331i	IBExU 10 ATEX 1068 X zone 0: II 1 G Ex ia IIC T4 Ga zone 20: II 1 D Ex ta IIIC T 85 °C, IP6x <b>in preparation</b>					
Safety technical max. values	$U_i = 28$ V, $I_i = 93$ mA, $P_i = 660$ mW, $C_i \approx 0$ nF, $L_i \approx 0$ $\mu$ H					
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: -25 ... 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 $\mu$ H/m					
<b>Miscellaneous</b>						
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA					
Weight	approx. 200 g					
Installation position	any <sup>7</sup>					
Operational life	$> 100 \times 10^6$ pressure cycles					
CE-conformity	EMC Directive: 2004/108/EC			Pressure Equipment Directive: 97/23/EC (module A) <sup>8</sup>		
<sup>7</sup> 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.						
<sup>8</sup> This directive is only valid for devices with maximum permissible overpressure $> 200$ bar						
<b>Wiring diagrams</b>						
<b>2-wire-system (current)</b> 			<b>3-wire-system (voltage)</b> 			
<b>Pin configuration</b>						
Electrical connections	ISO 4400	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1/ metal (4-pin)	field housing	cable colours (DIN 47100)
Supply +	1	3	3	3	IN +	white
Supply -	2	4	1	1	IN -	brown
Signal + (only for 3-wire)	3	1	6	-	OUT +	green
shield	ground pin	5	2	4	$\perp$	yellow / green
Communication interface <sup>9</sup>	RxD	-	4	-	-	-
	TxD	-	5	-	-	-
	GND	-	7	-	-	-
<sup>9</sup> may not be transmitted directly with the PC (the suitable adapter is available as accessory)						

**Electrical connections (dimensions in mm)**

**standard**

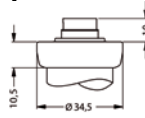


ISO 4400  
(IP 65)

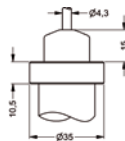


cable outlet  
(IP 68) <sup>10</sup>

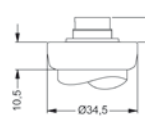
**option**



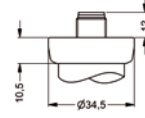
Binder Series 723 5-pin  
(IP 67)



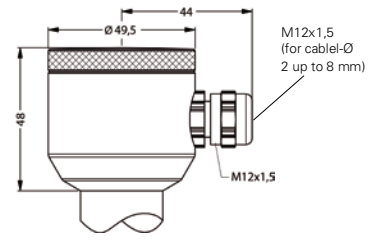
cable gland  
(IP 67) <sup>11</sup>



Binder Series 723 7-pin  
(IP 67)



M12x1 4-pin  
(IP 67)

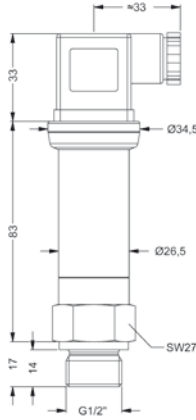


field housing  
(IP 67)

<sup>10</sup> different cable types and lengths available, permissible temperature depends on kind of cable  
<sup>11</sup> standard: 2 m PVC cable (without ventilation tube, permissible temperature: -5 ... 70 °C)

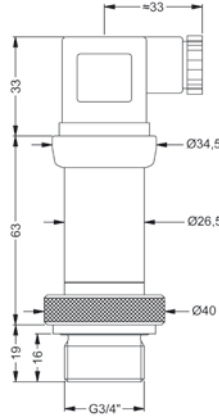
**Mechanical connection (dimensions in mm)**

**standard DMP 331 i / DMP 333 i \***



G1/2" DIN 3852

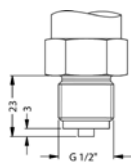
**LMP 331 i**



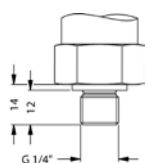
G3/4" DIN 3852

\* for nominal pressure  $P_N > 400$  bar increases the length of DMP 333i with IS-vesion by 19 mm and of DMP 333i without IS-vesion by 39 mm

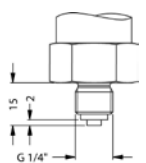
**option for DMP 331 i and DMP 333 i**



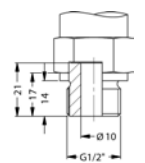
G1/2" EN 837



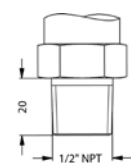
G1/4" DIN 3852



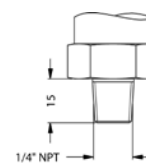
G1/4" EN 837



G1/2" open port



1/2" NPT



1/4" NPT

⇒ metric threads and others on request

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