DMP 331i
DMP 333i
LMP 331i

Precision-
- Pressure Transmitter
- Screw-in Transmitter

- nominal pressure ranges
  from 0 ... 170 mbar
  up to 0 ... 600 bar

The precision pressure transmitters DMP 331i and DMP 333i as well as the precision screw-in transmitter LMP 331i represent the further development of our approved standard transmitters for industrial use.

They are designed for universal use in industry at high standards for accuracy and stability.

The basic mechanical construction is adequate to the standard versions. A completely new developed digital amplifier based on a microprocessor unit and a 16-bit A/D converter replaces the conventional analogue amplifier. Now it's possible to compensate actively the sensor specific deviations like nonlinearity and thermal effects. You will get pressure transmitters with excellent technical features at an extraordinary price.

Typical areas of use are:

DMP 331i / DMP 333i:

- process control
- laboratory applications
- gas consumption and calorimetric measurements

LMP 331i:

- tank level measurement of neutral and aggressive fluids
- chemical, pharmaceutical and foodstuff industry
- water and sewage treatment

Characteristics

- **accuracy** (at nominal range)
  0.05 % FSO BFSL
  (0.1 % FSO IEC 60770)
- **thermal error for offset and span in temperature range -20 ... 80 °C:**
  0.2 % FSO,
  average TC 0.02 % FSO / 10 K
  (at nominal pressure)
- output signal 4 ... 20 mA / 2-wire
- option: digital interface RS-232 for adjusting of offset, span, and damping
- good long term stability
- option Ex version
  (only for 4 ... 20 mA / 2-wire)
  TÜV 03 ATEX 2006 X
- customer specific versions:
  - special pressure ranges
  - other versions on request

CE Ex

DMP 331i / DMP 333i / LMP 331i
Precision Pressure Transmitter

TÜV CERT DIN EN ISO 9001

DMP331i / DMP333i / LMP331i

Precision Pressure Transmitter

Technical Data

Input pressure range

DMP 331i [1]								
Nominal pressure gauge	[bar]	-1 ... 0	0.17	0.35	1	2	7	17	35
Nominal pressure abs.	[bar]	-	-	0.35	1	2	7	17	35
Permissible overpressure	[bar]	3	0.5	1	3	4	20	60	100
DMP 333i [1]								
Nominal pressure gauge [2]	[bar]	70		170		350		600	
Nominal pressure abs.	[bar]	70		170		350		600	
Permissible overpressure	[bar]	140		340		600		1000	
LMP 331i								
Nominal pressure gauge	[bar]	0.17	0.35	1	2	7	17	35	
Level	[mWs]	1.7	3.5	10	20	70	170	350	
Permissible overpressure	[bar]	0.5	1	3	4	20	60	100	

Output signal / Supply

Standard	2-wire:	4 ... 20 mA / U_B = 12 ... 36 V_{DC}	Ex-protection: U_B = 14 ... 28 V_{DC}
Optional	2-wire:	4 ... 20 mA with digital interface RS-232 [3] for adjusting the following parameters (interface / software necessary [4]): offset: 0 ... 80 % FSO turn down of span: 1:10 damping: 0 ... 99.9 s	
	3-wire:	0 ... 10 V (on request)	

Performance

Accuracy	IEC 60770 [5]: ≤ ± 0.1 % FSO	BFSL: ≤ ± 0.05 % FSO relating to nominal range
Permissible load	$R_{max} = [(V_S - V_{S\,min}) / 0.02]\ \Omega$	
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ	
Long term stability	≤ ± (0.1 x nominal range / adjusted range) % FSO / year	
Response time	approx. 40 ms	

Thermal errors (Offset and Span)

Tolerance band	≤ ± (0.2 x nominal range / adjusted range) % FSO
TC, average	± (0.02 x nominal range / adjusted range) % FSO / 10 K
in compensated range	- 20 ... 80 °C

Electrical protection

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission an immunity according to EN 61326
Option Ex-protection DX13-DMP 331i / DX13-DMP 333i / DX13-LMP 331i	zone 0: II 1 G EEx ia IIC T4 (only with 4 ... 20 mA / 2-wire) zone 20: II 1 D T 85°C (only with 4 ... 20 mA / 2-wire) safety technical maximum values: V_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \leq$ 1nF, $L_i \leq$ 10 µH

Mechanical stability

Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 ms

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[1] pressure ranges ≤ 40 bar as DMP 331i; pressure ranges > 40 bar as DMP 333i

[2] measurement starts with ambient pressure

[3] RS-232 interface only possible with el. connection Binder serie 723 (7pin))

[4] software, interface, and cable have to be ordered separately (ordering no.: I-232; software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or higher, and XP)

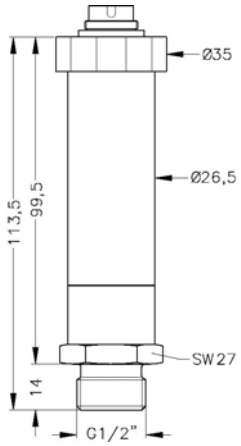
[5] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) relating to nominal range

Permissible temperatures

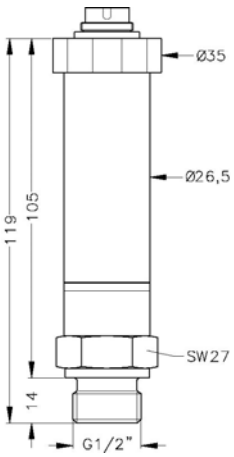
Medium	-25 ... 125 °C
Electronics / environment	-25 ... 85 °C
Storage	-40 ... 100 °C

Mechanical connection

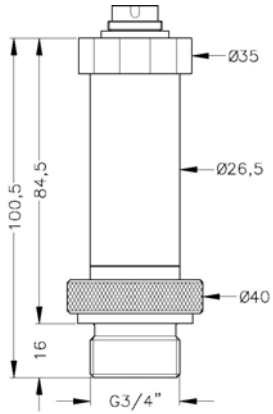
Standard



DMP 331i
with G1/2" DIN 3852

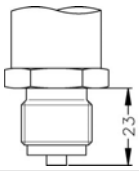


DMP 333i
with G1/2" DIN 3852

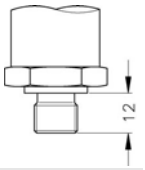


LMP 331i
with G3/4" DIN 3852

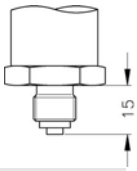
Optional for DMP 331i and DMP 333i



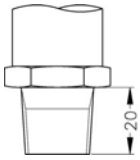
G1/2" EN 837



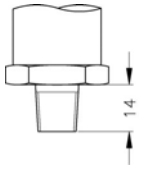
G1/4" DIN 3852



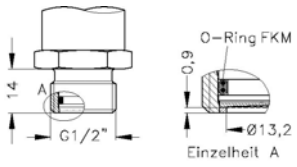
G1/4" EN 837



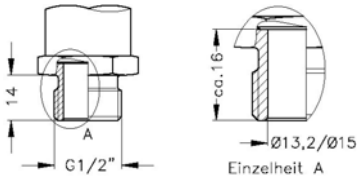
1/2" NPT



1/4" NPT



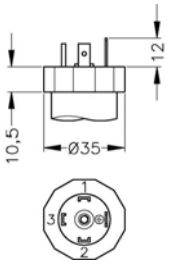
G1/2" flush (DIN 3852) [6,7]



G1/2" open port [7]

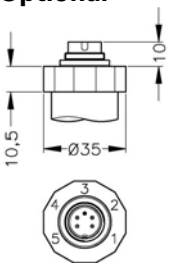
Electrical connection

Standard

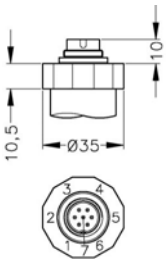


DIN 43650 (IP 65)

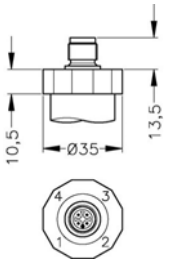
Optional



Binder Series 723 5-pin (IP 67)



Binder Series 723 7-pin (IP 67)



M12x1 4-pin (IP 67)

[6] impossible for nominal pressure P_N < 0.1 bar and for vacuum ranges

[7] only possible for DMP 331i

Materials

Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304)
Seals (media wetted)	DMP 331i / LMP 331i: FKM DMP 333i: NBR optional: welded version [8]; others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure part, seals, diaphragm

Miscellaneous

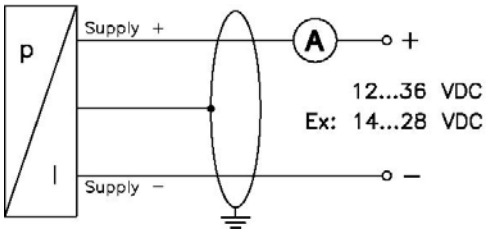
Current consumption	max. 25 mA
Weight	approx. 180 ... 200 g
Installation position	any [9]
Operation life	> 100 x 10^6 cycles

Pin configuration

Electrical connection		DIN 43650	Binder 723 (5-pin)	Binder 723 (7-pin)	M12x1 (4-pin)
2-wire-system	Supply +	1	3	3	1
	Supply –	2	4	1	2
	Ground	ground pin	5	2	4
RS-232	RxD	-	-	4	-
	TxD	-	-	5	-
	CTS	-	-	6	-
	GND	-	-	7	-

Wiring diagram

2-wire-system (current)



[8] welded version only with pressure ports according to EN 837; welded version not available with pressure ranges ≤ 0.16 bar and > 40 bar

[9] 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.

Ordering code DMP 331i/ DMP 333i/ LMP 331i

DMP 331i/ DMP 333i/ LMP 331i

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Pressure	
For DMP 331i	
gauge	1 1 0
absolute	1 1 1
For DMP 333i	
gauge [1]	1 3 0
absolute	1 3 1
For LMP 331i	
in bar	4 3 0
in mWC	4 3 1
Input [mWC] [bar]	
For DMP 331i [2] or LMP 331i	
1,7 / 0,17	1 7 0 0
10 / 1,0	1 0 0 1
20 / 2,0	2 0 0 1
70 / 7,0	7 0 0 1
350 / 35	3 5 0 2
For DMP 333i [2]	
70	7 0 0 2
170	1 7 0 3
350	3 5 0 3
600	6 0 0 3
For DMP 331i	
-1 ... 0	X 1 0 2
customer	X X X X
Output	
4 ... 20 mA / 2-wire	1
Intrinsic safety for zone 0 / 4 ... 20 mA / 2-wire	E
0 ... 10 V / 3-wire	3
customer	X
Accuracy (at nominal pressure)	
0,1 % [3]	1
customer	X
Electrical Connection	
Male and female plug DIN 43650	1 0 0
Binder series 723 (5-pin)	2 0 0
Male and female plug Binder series 723 (7-pin)	A 0 0
M12x1 (4-pin)	M 0 0
customer	X X X
Mechanical Connection	
For DMP 331i or DMP 333i	
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 [4, 5]	F 0 0
G1/2" DIN 3852 open pressure port [5]	H 0 0
1/2" NPT	N 0 0
1/4" NPT	N 4 0
For LMP 331i	
G3/4" DIN 3852 with flush sensor	K 0 0
customer	X X X
Seals	
For DMP 331i or LMP 331i	
FKM	1
without (welded version) [6]	2
For DMP 333i	
NBR	5
customer	X
Special version	
standard	1 1 1
RS-232 interface [7]	1 2 1
customer	X X X

1 measurement starts with ambient pressure
2 pressure ranges = 40 bar as DMP 331i; pressure ranges > 40 bar as DMP 333i
3 available on request: calibration of individual pressure range higher than 100 mbar with accuracy 0.1 %
4 mechanical connection G1/2" DIN 3852 flush impossible for nominal pressure P_N < 0.1 bar and for vacuum ranges
5 only possible for DMP 331i
6 welded version only with pressure ports according to EN 837; not possible with pressure ranges = 0.16 bar and > 25 bar
7 RS-232 interface only possible with el. connection Binder serie 723 (7pin)
Software, Interface and cable for DMP 331i, DMP 333i and LMP 331i with option RS-232 have to be order separately (Order.-Nr.: I-232; Software appropriate for Windows® 95, 98, 2000, NT Version 4.0 or newer and XP)
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