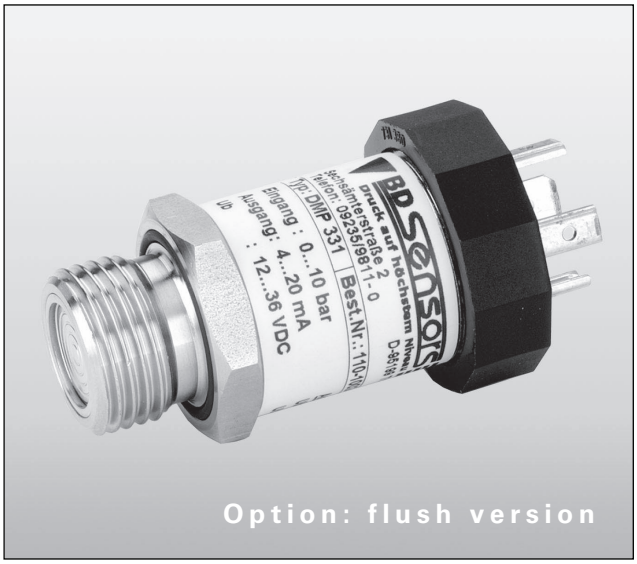
BD SENSORS
pressure measurement



DMP 331

Industrial Pressure Transmitter

- piezoresistive stainless steel sensor
- accuracy:
  0.175 / 0.125 / 0.05 % FSO BFSL
  (0.35 / 0.25 / 0.1 % FSO IEC 60770)
- nominal pressure ranges
  from 0 ... 40 mbar
  up to 0 ... 40 bar

The DMP 331 is a pressure transmitter for universal use in all branches of industry. It proportionally converts fluid pressure into an electrical signal.

The transmitter is suited for measurement of static as well as dynamic pressure. It can be used with all fluids compatible with stainless steel 1.4571 (316Ti) or 1.4435 (316L) and FKM. Alternative sealing materials are available on request.

For assistance please give us your application with specification of the medium.

A variety of standard output signals as well as mechanical and electrical connections make the DMP 331 covering a wide field of applications.

Typical areas of use are:

- pneumatics
- process control and chemical industry
- environmental engineering
- measurement technology

Characteristics

- small thermal effect
- excellent linearity
- option Ex: II 1 G EEx ia IIC T4
  (only for 4 ... 20 mA / 2-wire)
  (TÜV 03 ATEX 2006 X)
- option: flush pressure port
- customer specific versions:
  - special pressure ranges
  - variety of electrical and mechanical connections
  - other versions on request

CE Ex

DMP 331
Industrial Pressure Transmitter

TÜV CERT DIN EN ISO 9001

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DMP 331

Industrial Pressure Transmitter — Technical Data

Input pressure range

Nominal pressure gauge	[bar]	-1...0	0.04	0.06	0.10	0.16	0.25	0.4	0.6	1.0	1.6	2.5	4.0	6.0	10	16	25	40
Nominal pressure abs.	[bar]	-	-	-	0.10	0.16	0.25	0.4	0.6	1.0	1.6	2.5	4.0	6.0	10	16	25	40
Permissible overpressure	[bar]	3	0.2	0.2	0.5	0.5	1	1	3	3	6	6	20	20	20	60	100	100

Output signal / Supply

Standard	2-wire:	4 ... 20 mA / V_S = 12 ... 36 V_{DC}	Ex-protection: V_S = 14 ... 28 V_{DC}
Optional	3-wire:	0 ... 20 mA / V_S = 14 ... 36 V_{DC} 0 ... 10 V / V_S = 14 ... 36 V_{DC}	

Performance

Accuracy [1]	standard:	nominal pressure > 0.4 bar:	≤ ± 0.35 % FSO	(BFSL: ≤ ± 0.175 % FSO)
		nominal pressure ≤ 0.4 bar:	≤ ± 0.5 % FSO	(BFSL: ≤ ± 0.25 % FSO)
	optional:	nominal pressure > 0.4 bar:	≤ ± 0.25 % FSO	(BFSL: ≤ ± 0.125 % FSO)
		nominal pressure ≥ 0,16 bar	≤ ± 0.1 % FSO	(BFSL: ≤ ± 0.05 % FSO)
Permissible load	current 2-wire:	$R_{max} = [(V_S - V_{S\,min}) / 0.02]\ \Omega$		
	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			
Response time	< 5 ms			

Thermal errors (Offset and Span)

Nominal pressure P_N	[bar]	-1 ... 0	≤ 0.1	≤ 0.25	≤ 0.4	≤ 1.0	> 1.0
Tolerance band	[% FSO]	≤ ± 0.75	≤ ± 2.0	≤ ± 1.5	≤ ± 1.0	≤ ± 1.0	≤ ± 0.75
TC, average	[% FSO / 10 K]	± 0.07	± 0.3	± 0.2	± 0.14	± 0.1	± 0.07
in compensated range	[°C]	0 ... 70	0 ... 50			0 ... 70	

Electrical protection

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Option Ex-protection DX13-DMP 331	II 1 G EEx ia IIC T4 (only with 4 ... 20 mA / 2-wire) safety technical maximum values: V_i = 28 V, I_i = 93 mA, P_i = 660 mW

Permissible temperatures

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

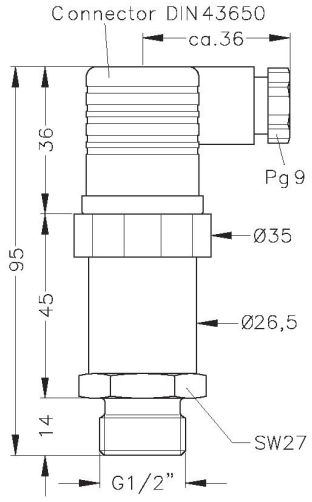
Mechanical stability

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

[1] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

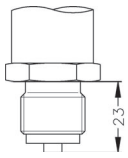
Mechanical connection

Standard

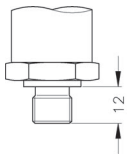


G1/2“ DIN 3852
M20 x 1.5

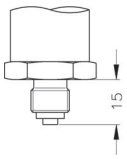
Optional



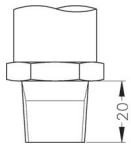
G1/2“ EN 837
M20 x 1.5



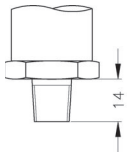
G1/4“ DIN 3852
M10 x 1
M12 x 1
M12 x 1.5



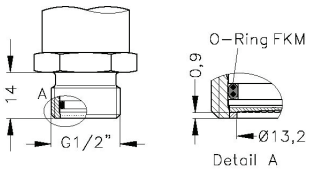
G1/4“ EN 837



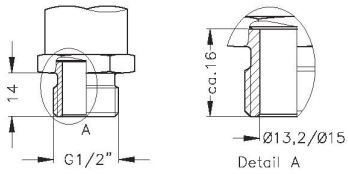
1/2“ NPT



1/4“ NPT



G1/2“ flush (DIN 3852) [2]

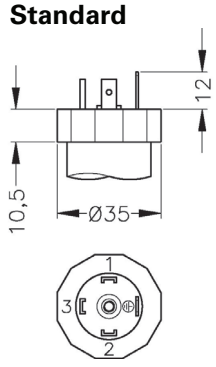


G1/2“ open port

⇨ Total length of devices with Ex-protection increases by 26.5 mm!
⇨ Total length of devices with accuracy 0.1 % FSO IEC 60770 increases by 45 mm! (standard and Ex-protection)

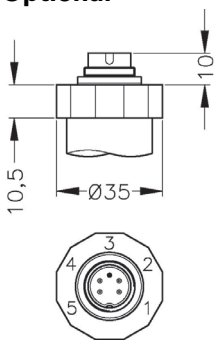
Electrical connection

Standard

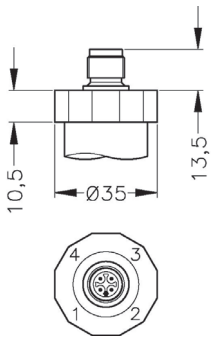


DIN 43650 (IP 65)

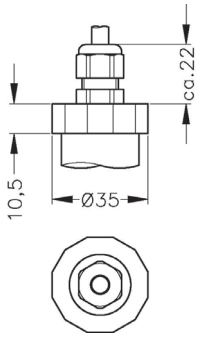
Optional



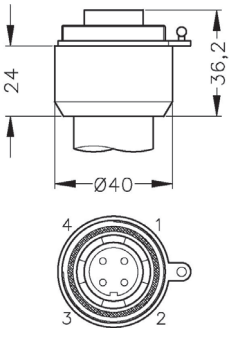
Binder Series 723 (IP 67)



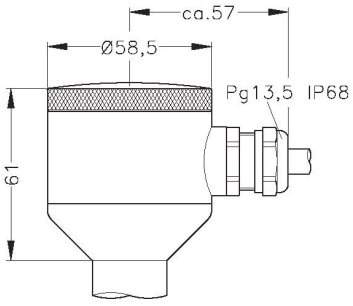
M12x1 4-pin (IP 67)



Cable gland (IP 67) [3]



Buccaneer (IP 68) [4]



Field housing (IP 67)

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

[3] different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube

Materials

Pressure port	stainless steel 1.4571 (316Ti)
Housing	stainless steel 1.4301 (304) / field housing: 1.4305 (303), cable gland: brass, nickel plated
Seals (media wetted)	standard: FKM optional: welded version [5]; others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

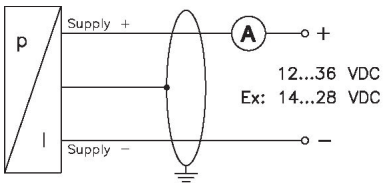
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any [6]
Operational life	> 100 x 10^6 cycles

Pin configuration

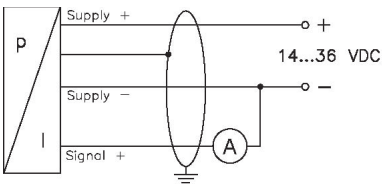
Electrical connection		DIN 43650	Binder 723 (5-pin)	M12x1 (4-pin)	Buccaneer (4-pin)	cable colours (DIN 47100)
2-wire-system	Supply + Supply –	1 2	3 4	1 2	12	white brown
	Ground	ground pin	5	4	4	yellow / black
3-wire-system	Supply + Supply – Signal +	1 2 3	3 4 1	1 2 3	1 2 3	white brown green
	Ground	ground pin	5	4	4	yellow / black

Wiring diagrams

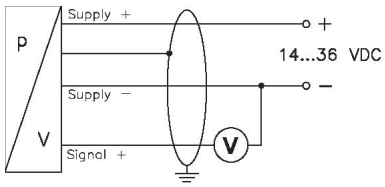
2-wire-system (current)



3-wire-system (current)



3-wire-system (voltage)



[4] for gauge pressure cable with ventilation tube required

[5] welded version only with pressure ports according to EN 837; welded version not available with pressure ranges ≤ 0.16 bar and > 25 bar

[6] 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.

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Ordering code DMP 331

DMP 331 ☐☐☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure	Code
gauge	1 1 0
absolut [1]	1 1 1

Input [bar]	Code
0,04 [1]	0 4 0 0
0,06 [1]	0 6 0 0
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	X X X X

Output	Code
4 ... 20 mA / 2-wire	1
0 ... 20 mA / 3-wire	2
0 ... 10 V / 3-wire	3
Intrinsic safety for zone 0 / 4 ... 20 mA / 2-wire	E
customer	X

Accuracy		Code
standard for $P_N > 0{,}4$ bar	0,35 %	3
standard for $P_N \leq 0{,}4$ bar	0,5 %	5
option for $P_N > 0{,}4$ bar	0,25 %	2
option for $P_N \geq 0{,}16$ bar	0,1 %	1
customer		X

Electrical Connection	Code
Male and female plug DIN 43650	1 0 0
Binder series 723 (5-pin)	2 0 0
Cable gland incl. Cable [2]	4 0 0
Buccaneer IP68 [3]	5 0 0
M12x1 (4-pin)	M 0 0
Field housing stainless steel	8 0 0
customer	X X X

Mechanical Connection	Code
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]	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	X X X

Seals	Code
FKM	1
without (welded version) [5]	2
customer	X

Special version	Code
standard	0 0 0
customer	X X X

[1] Nominal pressure absolute not possible for $P_N < 0{,}1$ bar
[2] different cable types and lengths deliverable, standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube
[3] for gauge pressure cable with ventilation tube required
[4] mechanical connection G1/2" DIN 3852 flush impossible for nominal pressure $P_N < 0.1$ bar and for vacuum ranges
[5] welded version only with pressure ports according to EN 837; not possible with pressure ranges = 0.16 bar and > 25 bar

TÜV CERT DIN EN ISO 9001

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