



# DMP 331

## Industrial Pressure Transmitter

- ▶ piezoresistive stainless steel sensor
- ▶ accuracy acc. to IEC 60770: 0.35 / 0.25 % FSO
- ▶ 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

- ▶ small thermal effect
- ▶ excellent linearity
- ▶ accuracy according to IEC 60770: 0.35 % FSO option: 0.25 % FSO
- ▶ 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

Characteristics



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Input pressure range <sup>1</sup>																	
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 / $V_s = 12 \dots 36 V_{DC}$ Ex-protection: $V_s = 14 \dots 28 V_{DC}$
Optional	3-wire: 0 ... 20 mA / $V_s = 14 \dots 36 V_{DC}$ 0 ... 10 V / $V_s = 14 \dots 36 V_{DC}$

Performance	
Accuracy <sup>2</sup>	standard: $\leq \pm 0.35 \% \text{ FSO}$ (BFSL: $\leq \pm 0.175 \% \text{ FSO}$ ) nominal pressure $\leq 0.4 \text{ bar}$ : $\leq \pm 0.5 \% \text{ FSO}$ (BFSL: $\leq \pm 0.25 \% \text{ FSO}$ ) option (nominal pressure $> 0.4 \text{ bar}$ ): $\leq \pm 0.25 \% \text{ FSO}$ (BFSL: $\leq \pm 0.125 \% \text{ FSO}$ )
Permissible load	current 2-wire: $R_{max} = [(V_s - V_{smin}) / 0.02] \Omega$ 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 / $\text{k}\Omega$
Long term stability	$\leq \pm 0.1 \% \text{ FSO} / \text{year}$
Response time	$< 5 \text{ ms}$

Thermal errors (Offset and Span)						
Nominal pressure $P_N$ [bar]	-1 ... 0	$\leq 0.1$	$\leq 0.25$	$\leq 0.4$	$\leq 1.0$	$> 1.0$
Tolerance band [% FSO]	$\leq \pm 0.75$	$\leq \pm 2.0$	$\leq \pm 1.5$	$\leq \pm 1.0$	$\leq \pm 1.0$	$\leq \pm 0.75$
TC, average [% FSO / 10 K]	$\pm 0.07$	$\pm 0.3$	$\pm 0.2$	$\pm 0.14$	$\pm 0.1$	$\pm 0.07$
in compensated range [°C]	0 ... 70		0 ... 50			0 ... 70

Electrical protection	
Insulation resistance	$> 100 \text{ M}\Omega$
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: $V_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$

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

<sup>1</sup> welded version not possible with pressure ranges  $\leq 0.16 \text{ bar}$  and  $> 25 \text{ bar}$

<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

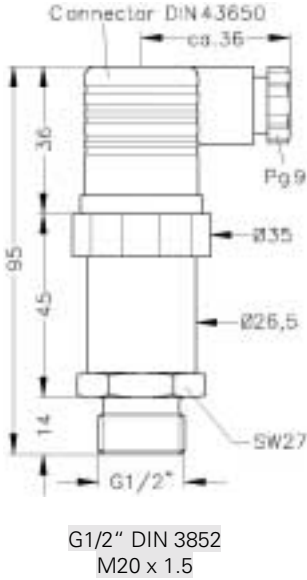
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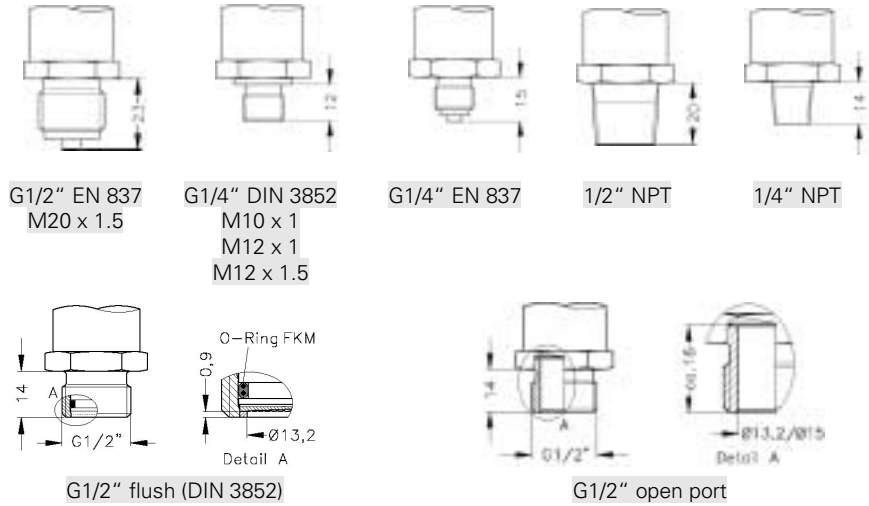
Technical Data

## Mechanical connection <sup>3</sup>

### Standard



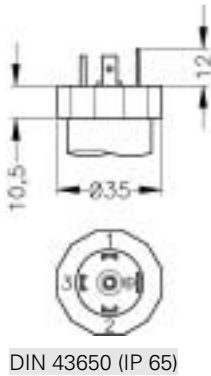
### Optional



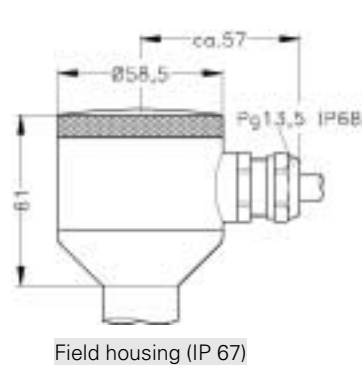
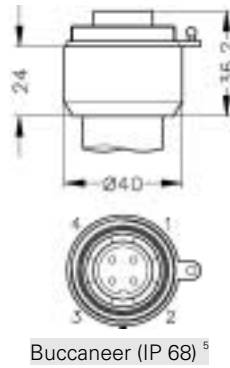
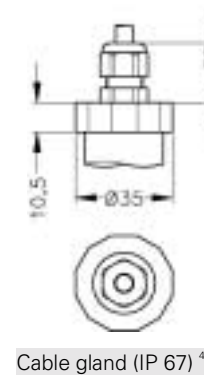
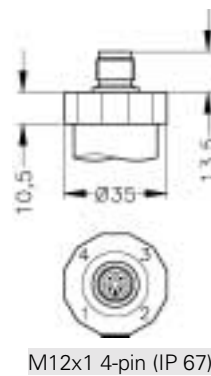
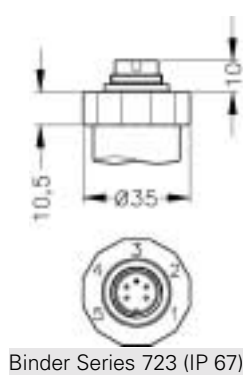
⇒ Ex-protection: total length increases by 26.5 mm!

## Electrical connection

### Standard



### Optional



<sup>3</sup> welded version only with pressure ports according to EN 837

<sup>4</sup> different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube

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Technical Data

## 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 <sup>6</sup> others on request
Diaphragm	stainless steel 1.4435 (316L)
Media wetted parts	pressure port, seals, diaphragm

## Miscellaneous

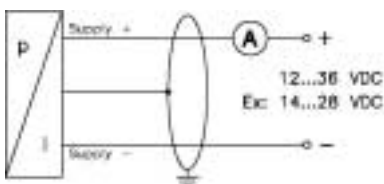
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA
Weight	approx. 140 g
Installation position	any <sup>7</sup>
Operational life	> 100 x 10 <sup>6</sup> cycles

## Pin configuration

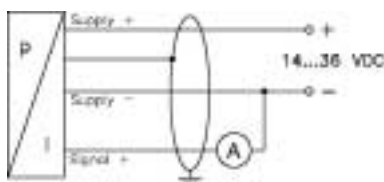
Electrical connection		DIN 43650	Binder 723 (5-pin)	M12x1 (4-pin)	Buccaneer (4-pin)	cable colours (DIN 47100)
2-wire-system	Supply +	1	3	1	12	white
	Supply -	2	4	2		brown
	Ground	ground pin	5	4	4	yellow / black
3-wire-system	Supply +	1	3	1	1	white
	Supply -	2	4	2	2	brown
	Signal +	3	1	3	3	green
	Ground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

## Wiring diagrams

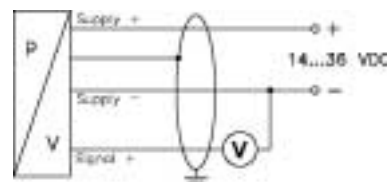
2-wire-system (current)



3-wire-system (current)



3-wire-system (voltage)



<sup>5</sup> for gauge pressure cable with ventilation tube required

<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  $> 25$  bar

<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.