

# DMD 331

## Differential Pressure Transmitter for Liquids and Gases

Stainless Steel Sensor

accuracy according to IEC 60770:  
0.5 % span



### Differential pressure

from 0 ... 20 mbar up to 0 ... 16 bar

### Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 10 V

### Special characteristics

- ▶ differential pressure wet / wet
- ▶ permissible static pressure -onesided- up to 30 times of differential pressure range
- ▶ compact design
- ▶ mechanical robust and reliable at dynamic pressures as well as shock and vibration

### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe version for gases and dust
- ▶ different electrical and mechanical connections
- ▶ customer specific versions

The DMD 331 is a differential pressure transmitter for industrial applications and is based on a piezoresistive stainless steel sensor, which can be pressurized on both sides with fluids or gases compatible with SST 1.4404 (316L) and 1.4435 (316L).

The compact design allows an integration of the DMD 331 in machines and applications with limited space. The DMD 331 calculates the difference between the pressure on the positive and the negative side and converts it into a proportional electrical signal.

### Preferred areas of use are



Plant and Machine Engineering



Energy Industry

### Preferred used for



Water



Input pressure range							
Nominal pressure [bar]		0.2	0.4	1	2.5	6	16
Differential pressure range [bar]	TD 1 : 1	0 ... 0.02	0 ... 0.04	0 ... 0.1	0 ... 0.25	0 ... 0.6	0 ... 1.6
	up to TD 10: 1	0 ... 0.2	up to 0 ... 0.4	up to 0 ... 1	up to 0 ... 2.5	up to 0 ... 6	up to 0 ... 16
Permissible static pressure, one-sided [bar]		0.5	1	3	6	20	60

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$
Option IS-version	2-wire: 4 ... 20 mA / $V_S = 14 \dots 28 V_{DC}$
Option 3-wire	3-wire: 0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$

Performance	
Accuracy <sup>1</sup>	<b>For ranges of max. input pressure + PN &gt; 1 bar (codes C,D,E)</b> $\leq \pm 0,5 \%$ span (differential pressure range with TD from 1:1 up to 5:1) $\leq \pm 1 \%$ span (differential pressure range with TD > 5:1 up to 10:1 ) <b>For ranges of max. input pressure + PN &gt; 1 bar (codes A,B,F)</b> $\leq \pm 0,5 \%$ span (differential pressure range with TD from 100 to 50 % from static pressure) $\leq \pm 1 \%$ span (differential pressure range with TD > 50 to 10 % from static pressure )
Permissible load	current 2-wire: $R_{max} = [(V_S - V_S \text{ min}) / 0.02 \text{ A}] \Omega$ voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: 0.05 % span / 10 V    load: 0.05 % span / $\text{k}\Omega$
Long term stability	$\leq \pm 0.2 \%$ span / year
Response time	< 5 msec

<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects <sup>2</sup> (Offset and Span) / Permissible temperatures			
Nominal pressure $P_N$ [bar]	0.2	0.4	$\geq 1.0$
Tolerance band [% span]	$\leq \pm 2.5$	$\leq \pm 2$	$\leq \pm 1.5$
TC, average [% span / 10 K]	$\pm 0.4$	$\pm 0.3$	$\pm 0.2$
in compensated range [°C]	0 ... 50		0 ... 70
Permissible temperatures	medium: -25 ... 125 °C	electronics / environment: -25 ... 85 °C	storage: -40 ... 100 °C

<sup>2</sup> relating to nominal pressure range

Electrical protection	
Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326

Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec

Materials	
Pressure port	stainless steel 1.4404 (316L)
Housing	aluminium, black anodized
Seals (media wetted)	FKM / 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. 250 g
Operational life	100 million load cycles
Ingress protection	IP 65
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Explosion protection (only for 4 ... 20 mA / 2 wire)	
Approvals DX3A-DMD 331	<b>IBExU08ATEX1124 X</b> zone 1: II 2G Ex ia IIC T4 Gb, II 2D Ex ia IIIC T85 °C Db zone 0: II 1G Ex ia IIC T4 Ga, II 1D Ex ia IIIC T85 °C Da
Safety technical maximum values	$U_i = 28 V_{DC}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i \leq 1 \text{ nF}$ , $L_i \leq 10 \mu\text{H}$ , the supply connections have an inner capacity of max. 27 nF to the housing
Permissible temperatures for environment	-25 ... 65 °C

Pin configuration	
Electrical connection	ISO 4400
Supply +	1
Supply -	2
Signal + (only 3-wire)	3
Shield	ground pin

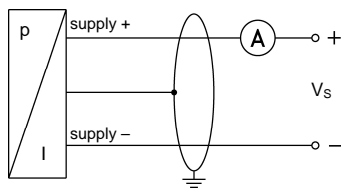
# DMD 331

Differential Pressure Transmitter

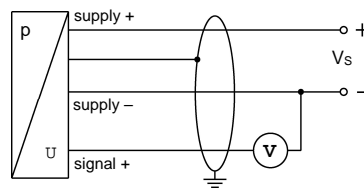
Technical Data

## Wiring diagrams

2-wire-system (current)



3-wire-system (voltage)

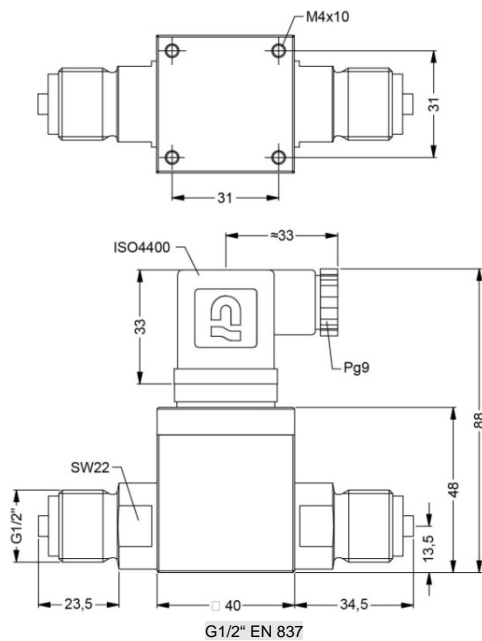


## Electrical connection

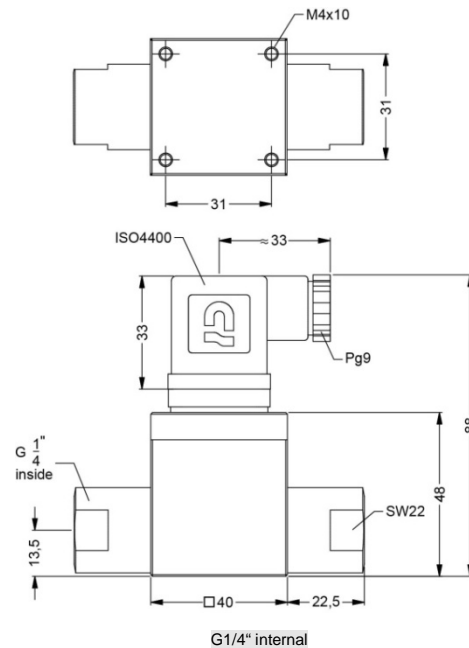
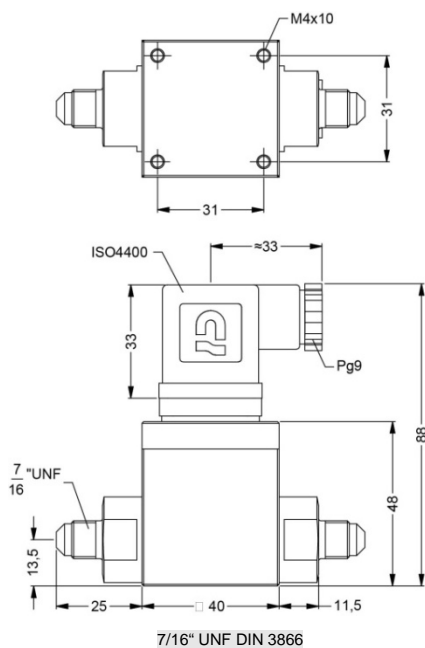
Standard	male and female plug ISO 4400 (IP 65)
Others	on request

## Mechanical connection (dimensions in mm)

standard



option



This data sheet contains product specification. Properties are not guaranteed. Subject to change without notice.

## Ordering code DMD 331

8.3.2021

DMD 331

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<b>Pressure</b>													
Differential pressure		7	3	0									
<b>Max. input pressure</b>		<b>Differential pressure</b>		<b>Max. permissible static pressure</b>									
200 mbar	(0 ... 20 / 200 mbar)			1 bar	F								
400 mbar	(0 ... 40 / 400 mbar)			1 bar	A								
1,0 bar	(0 ... 100 mbar / 1,0 bar)			3 bar	B								
2,5 bar	(0 ... 250 mbar / 2,5 bar)			6 bar	C								
6,0 bar	(0 ... 0,60 / 6,0 bar)			20 bar	D								
16,0 bar	(0 ... 1,60 / 16,0 bar)			60 bar	E								
Customer					9								
<b>Differential pressure range</b>					<b>F</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>			
0 ... 20 mbar		X							0	2	0	0	
0 ... 40 mbar		X	X						0	4	0	0	
0 ... 100 mbar		X	X	X					1	0	0	0	
0 ... 200 mbar		X	X	X					2	0	0	0	
0 ... 250 mbar			X	X	X				2	5	0	0	
0 ... 400 mbar			X	X	X				4	0	0	0	
0 ... 0,60 bar				X	X	X			6	0	0	0	
0 ... 1,0 bar				X	X	X			1	0	0	1	
0 ... 1,6 bar				X	X	X			1	6	0	1	
0 ... 2,5 bar				X	X	X			2	5	0	1	
0 ... 4,0 bar					X	X			4	0	0	1	
0 ... 6,0 bar					X	X			6	0	0	1	
0 ... 10,0 bar						X			1	0	0	2	
0 ... 16,0 bar						X			1	6	0	2	
Customer range					9	9	9	9					
Customer underpressure					X	X	X	X					
<b>Output</b>													
4 ... 20 mA / 2-wire										1			
0 ... 10 V / 3-wire										3			
0 ... 5 V / 3-wire										4			
Intrinsic safety Ex ia 4 ... 20 mA / 2-wire										E			
Ex nA- "n" 4 ... 20 mA/2-wire + connector 105										N			
Customer					9								
<b>Accuracy</b>													
1 % (diff. pressure range TD > 5:1)										8			
0,5 % (diff. pressure range TD from 1:1 to 5:1)										5			
1 % including Calibration Certificate (diff. pressure range TD > 5:1)										U			
0,5 % including Calibration Certificate (diff. pressure range TD from 1:1 to 5:1)										T			
Customer					9								
<b>Electrical connection</b>													
Connector DIN 43650 (ISO 4400)(IP 65)										1	0	0	
Connector ISO 4400 (IP 65) + silicone seals										1	0	5	
Connector DIN 43650 (ISO 4400) - potting compound inside (IP 67)										E	0	0	
Customer					9	9	9						
<b>Mechanical connection</b>													
G 1/2" EN 837										2	0	0	
M 20 x 1,5 EN 837 + cap nuts and welding nipples										8	0	0	
G 1/4" internal thread										J	0	0	
7/16 UNF DIN 3866										U	0	0	
M 12 x 1 special										D	2	2	
Customer					9	9	9						
<b>Seals</b>													
Viton (FKM)													1
Without seals - welded (only with EN 837; only for 0,16 ≤ P <sub>N</sub> ≤ 40 bar )													2
EPDM													3
FFKM													7



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The company BD SENSORS s.r.o. is certified by TÜV SÜD Czech according to the standard ISO 9001.

Customer	9			
Special version				
Standard	0	0	0	
Customer	9	9	9	

0,-...without additional charge / On request...in accordance with the producer / Standard EN 837-1/-3 corresponds to original Standard DIN 16288

The span of differential pressure can be selected on an individual basis from 10% to 100% max. pressure on input +.

X - selected version of max. pressure on input "+" and differential pressure is producible.

Surcharges for calibration are not subject to any discounts. Subject to change. □

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet. BD SENSORS reserves the right to change sensor specifications without further notice.



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