

# DMD 331

## Differential Pressure Transmitter for Liquids and Gases

Stainless Steel Sensor

accuracy according to IEC 60770:  
0.5 % FSO



### 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 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 up to	0 ... 0.2	0 ... 0.4	0 ... 1	0 ... 2.5	0 ... 6	0 ... 16
TD 1 : 10	0 ... 0.02	0 ... 0.04	0 ... 0.1	0 ... 0.25	0 ... 0.6	0 ... 1.6
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 <math>P_N &gt; 1</math> bar (codes C, D, E)</b> $\leq \pm 0.5$ % FSO (differential pressure range with TD from 1:1 up to 1:5) $\leq \pm 1$ % FSO (differential pressure range with TD > 1:5 up to 1:10) <b>for ranges of max. input pressure <math>P_N \leq 1</math> bar (codes A, B, F)</b> $\leq \pm 0.5$ % FSO (differential pressure range with TD from 100 to 50 % from nominal pressure) $\leq \pm 1$ % FSO (differential pressure range with TD > 50 to 10 % from nominal 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 % FSO / 10 V load: 0.05 % FSO / $k\Omega$
Long term stability	$\leq \pm 0.2$ % FSO / year at reference conditions
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 [% FSO]	$\leq \pm 2.5$	$\leq \pm 2$	$\leq \pm 1.5$
TC, average [% FSO / 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	<b>IBExU 08 ATEX 1125 X</b>
DX13A-DMD 331	zone 1: II 2G Ex ia IIC T4 Gb      zone 21: II 2D Ex ia IIIC T85°C Db
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

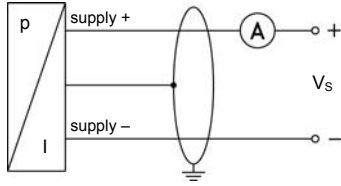
# DMD 331

Differential Pressure Transmitter

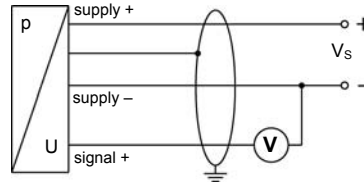
Technical Data

## Wiring diagrams

2-wire-system (current)

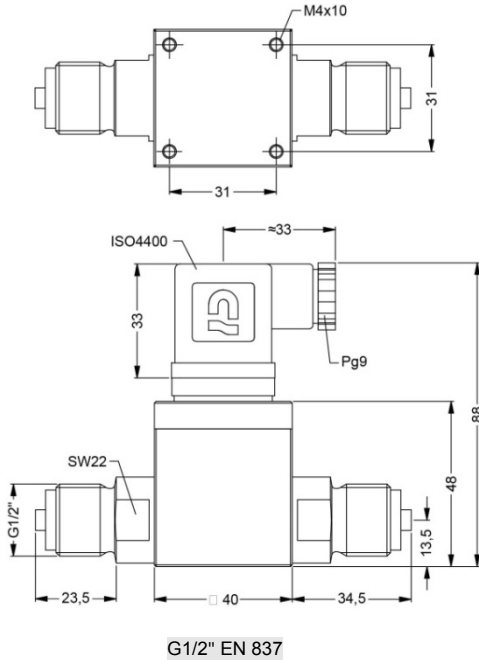


3-wire-system (voltage)

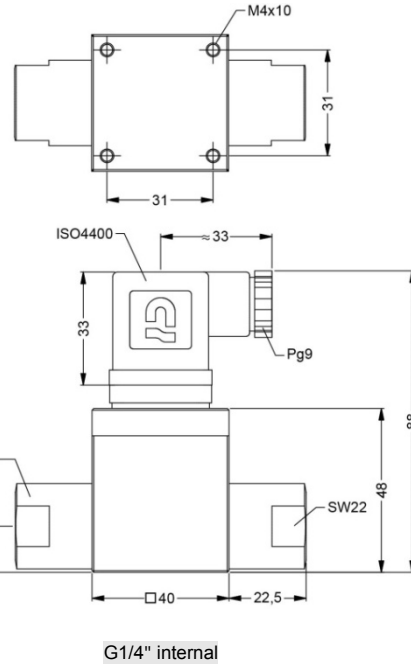
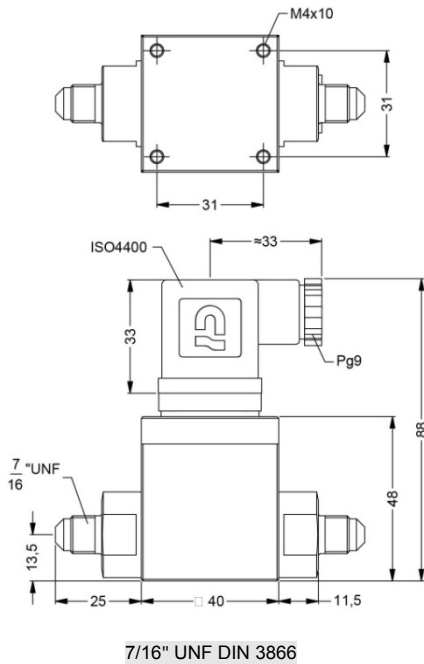


## Mechanical connection (dimensions in mm)

standard



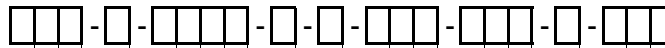
option



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## Ordering code DMD 331

DMD 331



<b>Pressure</b>																							
differential pressure		7	3	0																			
<b>Nominal pressure range [bar]</b>																							
0.2					F																		
0.4					A																		
1.0					B																		
2.5					C																		
6.0					D																		
16					E																		
customer					9										consult								
<b>Differential pressure range [bar]</b>																							
		F	A	B	C	D	E																
0.02		█						0	2	0	0												
0.04		█	█					0	4	0	0												
0.10		█	█	█				1	0	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												
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												
customer								9	9	9	9				consult								
<b>Output</b>																							
4 ... 20 mA / 2-wire														1									
intrinsic safety 4 ... 20 mA / 2 wire														E									
0 ... 10 V / 3-wire														3									
customer														9	consult								
<b>Accuracy</b>																							
TD ≤ 1:5		0.5 % FSO														5							
TD > 1:5 up to 1:10		1.0 % FSO														8							
customer																	9	consult					
<b>Electrical connection</b>																							
male and female plug ISO 4400																	1	0	0				
customer																	9	9	9	consult			
<b>Mechanical connection</b>																							
G1/2" EN 837																	2	0	0				
7/16" UNF DIN 3866																	U	0	0				
G1/4" internal thread																	J	0	0				
customer																	9	9	9	consult			
<b>Seals</b>																							
FKM																				1			
customer																				9	consult		
<b>Special version</b>																							
standard																				0	0	0	
customer																				9	9	9	consult

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