



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 ¹	for ranges of max. input pressure $P_N > 1$ bar (codes C, D, E) $\leq \pm 0.5$ % 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) for ranges of max. input pressure $P_N \leq 1$ bar (codes A, B, F) $\leq \pm 0.5$ % 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 Ω					
Long term stability	$\leq \pm 0.2$ % FSO / year at reference conditions					
Response time	< 5 msec					
¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects ² (Offset and Span) / Permissible temperatures						
Nominal pressure P_N [bar]	0.2	0.4			≥ 1.0	
Tolerance band [% FSO]	$\leq \pm 2.5$	$\leq \pm 2$			$\leq \pm 1.5$	
TC, average [% FSO / 10 K]	± 0.4	± 0.3			± 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
² 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	IBExU 08 ATEX 1125 X					
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					

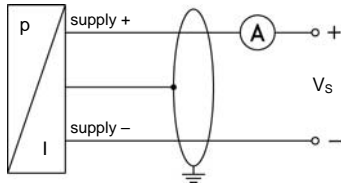
DMD 331

Differential Pressure Transmitter

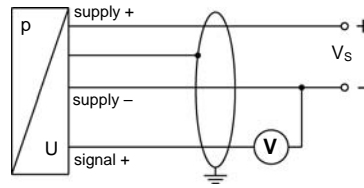
Technical Data

Wiring diagrams

2-wire-system (current)

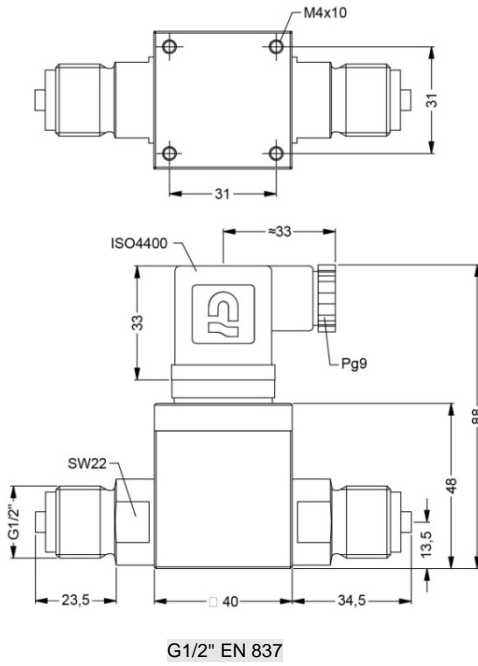


3-wire-system (voltage)

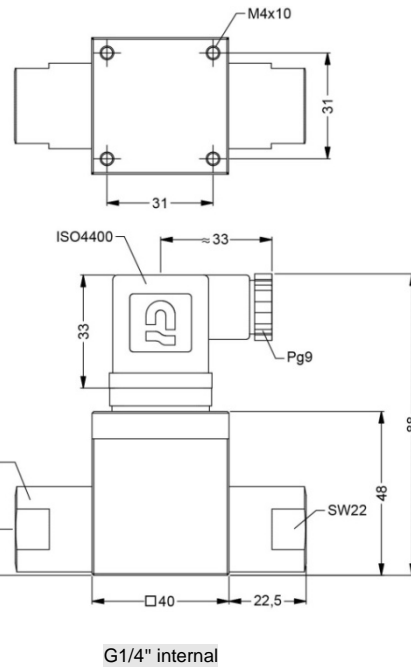
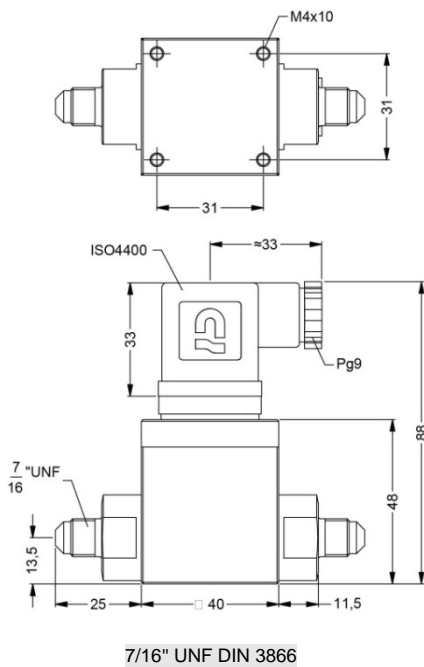


Mechanical connection (dimensions in mm)

standard

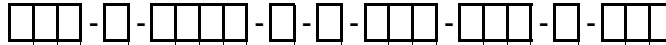


option



Ordering code DMD 331

DMD 331



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