SCHNEIDER
MESSTECHNIK

IDM 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 IDM 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 IDM 331 in machines and applications with limited space. The IDM 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

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Input pressure range						
Nominal pressure [bar]	0.2	0.4	1	2.5	6	16
Differential pressure range [bar]						
TD 1 : 1	0 ... 0.2	0 ... 0.4	0 ... 1	0 ... 2.5	0 ... 6	0 ... 16
up to	up to	up to	up to	up to	up to	up to
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 ... 36 V_{DC}		
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}		
Option 3-wire	3-wire: 0 ... 10 V / V_S = 14 ... 36 V_{DC}		
Performance			
Accuracy [1]	**for ranges of max. input pressure P_N > 1 bar (codes C, D, E)** ≤ ± 0.5 % FSO (differential pressure range with TD from 1:1 up to 1:5) ≤ ± 1 % FSO (differential pressure range with TD > 1:5 up to 1:10) **for ranges of max. input pressure P_N ≤ 1 bar (codes A, B, F)** ≤ ± 0.5 % FSO (differential pressure range with TD from 100 to 50 % from nominal pressure) ≤ ± 1 % FSO (differential pressure range with TD > 50 to 10 % from nominal pressure)		
Permissible load	current 2-wire: $R_{max} = [(V_S - V_S\ min) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ		
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ		
Long term stability	≤ ± 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]	≤ ± 2.5	≤ ± 2	≤ ± 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 DX13A-IDM 331	**IBExU 08 ATEX 1125 X** 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 mA, P_i = 660 mW, C_i ≤ 1 nF, L_i ≤ 10 µH, 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		

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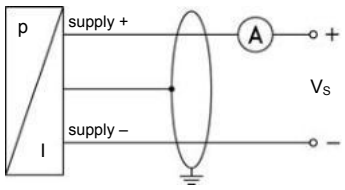
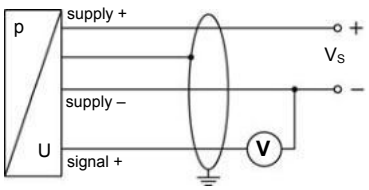
Wiring diagrams

2-wire-system (current)

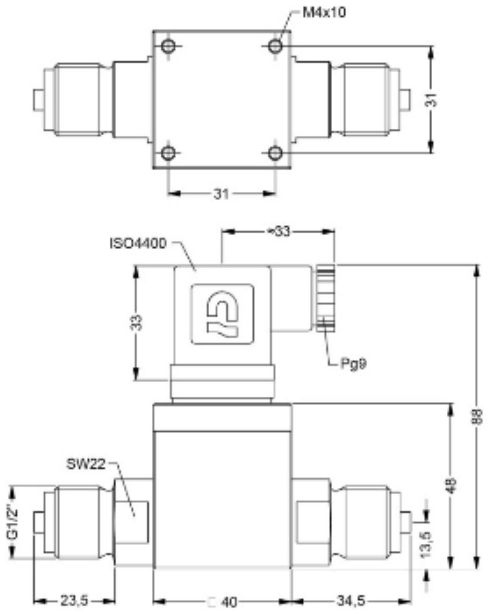


3-wire-system (voltage)



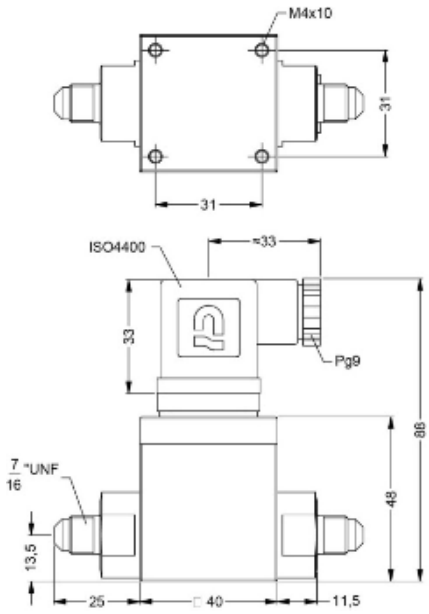
Mechanical connection (dimensions in mm)

standard

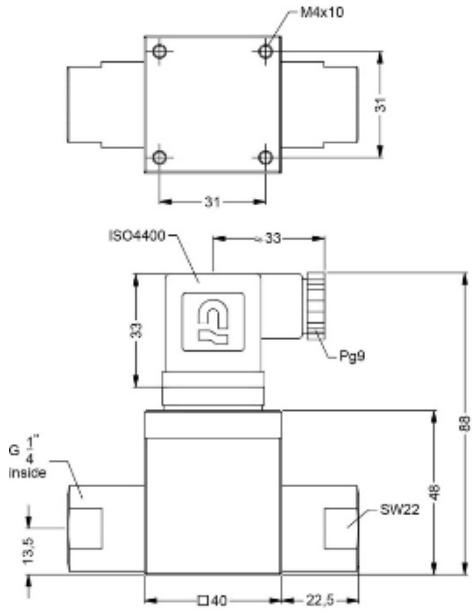


G1/2" EN 837

option



7/16" UNF DIN 3866



G1/4" internal

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Ordering code IDM 331

IDM 331 ☐☐☐-☐-☐☐☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Pressure	Code	
differential pressure	7 3 0	

Nominal pressure range [bar]	Code	
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	Code	
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

Output	Code	
4 … 20 mA / 2-wire	1	
intrinsic safety 4 … 20 mA / 2 wire	E	
0 … 10 V / 3-wire	3	
customer	9	consult

Accuracy		Code	
TD ≤ 1:5	0.5 % FSO	5	
TD > 1:5 up to 1:10	1.0 % FSO	8	
	customer	9	consult

Electrical connection	Code	
male and female plug ISO 4400	1 0 0	
customer	9 9 9	consult

Mechanical connection	Code	
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

Seals	Code	
FKM	1	
customer	9	consult

Special version	Code	
standard	0 0 0	
customer	9 9 9	consult

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