Pressure Transmitter DK 331

Ceramic sensor for aggressive media

- Minor temperature error
- High long-term stability
- Optional oxygen version
- Customized designs

D-EN-DK331_20200122

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Ceramic sensor for aggressive media

Characteristics
- Minor temperature error
- Long-term stability
- Option EX version (only for 4… 20 mA / 2-wire)
- TÜV 03 ATEX 2006 X
- Optional: oxygen version
- Customized versions:
  - Special measuring ranges
  - Various electrical and mechanical connections
  - Further versions on request

Preferred areas of application are:
- Medical
- Environmental engineering
- Electroplating
- Chemistry and pharmacy
- Oxygen applications

Principle of operation
The DK 331 is a pressure transmitter for universal applications in industrial areas as well as for particularly viscous, pasty or heavily contaminated media.

The basic element is a mechanically and chemically robust ceramic sensor.

A wide range of standardized output signals as well as mechanical and electrical connection variants cover almost all practical applications. In the case of heavily contaminated media, it is possible to use a quasi-flush ceramic sensor with a G ½ “ version. The customer also has access to the pressure transmitter with a pressure connection made of PVDF for aggressive media. The DMK 331 can be supplied in an Ex version (Zone 0).

Important instructions!
Technical changes and errors reserved.
Pictures can be similar.
The operating instructions belonging to this device must be observed! Download at www.schmidt-messtechnik.com.

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Input [1]																			
Nominal pressure rel. [bar]	-1...0	0,4 [2]	0,6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure abs. [bar]	-	-	0,6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Permissible overpressure [bar]	3	1	3	3	7	7	12	12	25	50	50	120	120	250	500	500	600	750

Output signal / auxiliary energy		
Standard	2-wire: 4 ... 20 mA/ U_B = 12 ... 36 V_{DC}	Ex version: U_B = 14 ... 28 V_{DC}
Options	3-wire: 0 ... 20 mA/ U_B = 14 ... 36 V_{DC} 0 ... 10 V/ U_B = 14 ... 36 V_{DC}	

Signal behavior	
Accuracy [3]	≤ ± 0,5 % FSO
Perm. resistance	electricity 2-wire: $R_{max} = [(U_B - U_{B\,min}) / 0{,}02]\ \Omega$ electricity 3-wire: R_{max} = 500 Ω voltage 3-wire: R_{min} = 10 kΩ
Influencing effects	auxiliary energy: 0,05 % FSO / 10 V resistance: 0,05 % FSO / kΩ
Response time	< 10 ms

Temperature error	
Temperature error (Zero point and span)	≤ ± 0,2 % FSO / 10 K
in the compensated area	-25 ... 85 °C

Electrical protection measures	
Short-circuit strength	permanent
Reverse polarity protection	no damage if connections are reversed, but also no function
Electromagnetic compatibility	interference emission and immunity to interference according to EN 61326
Explosion protection option (Ex) only with 4 ... 20 mA / 2-wire DX13-DK 331	Stainless steel connection: Zone 0 [4]: II 1 G EEx ia IIC T4 Zone 20: II 1 D T 85°C Plastics connection: Zone 1: II 2 G EEx ia IIC T4 Zone 20: II 1 D T 85°C Safety-related maximum values: U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \leq$ 1nF, $L_i \leq$ 10 µH

Mechanic solidity	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 ms

Temperature range		
Medium	-25 ... 135 °C	
Electronics / ambient	-25 ... 85 °C	Ex version: Use as Zone 0 equipment: -20 ... 60 °C Use as Zone 1 equipment: -25 ... 70 °C
Storage	-40 ... 100 °C	

[1] Pressure connection made of PVDF possible for pressure ranges up to 60 bar
[2] not possible as Ex version
[3] Characteristic curve deviation according to IEC 60770 - limit point setting (non-linearity, hysteresis, reproducibility)
[4] approved for atmospheric pressure from 0.8 bar to 1.1 bar

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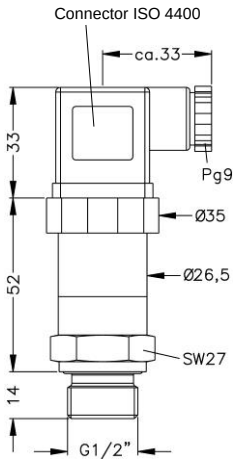
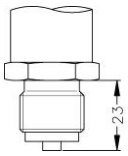
Mechanical connections (dimensions in mm)

Standard

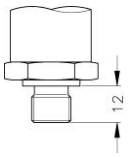


G½“ DIN 3852
M20x1,5

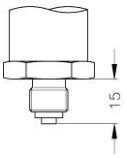
Options



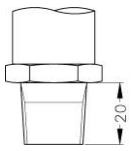
G½“ EN 837
M20x1,5



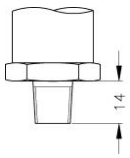
G¼“ DIN 3852
M10x1; M12x1; M12x1,5
(only up to 100 bar)



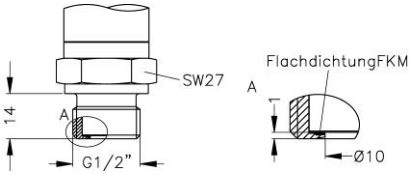
G¼“ EN 837



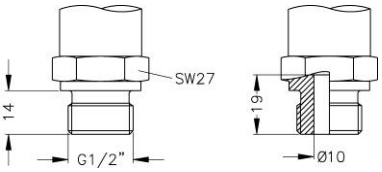
½“ NPT



¼“ NPT



G½ “ quasi-flush DIN 3852; M20x1,5
(only up to 25 bar; nominal pressure abs. on request)

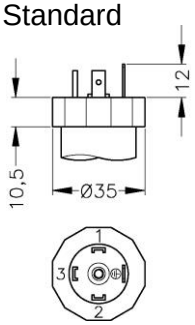


G½“ open connection DIN 3852;
M20x1,5

⇨ In the Ex version, the total length increases by 10 mm!

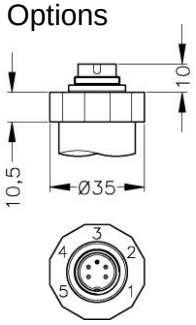
Electrical connections (dimensions in mm)

Standard

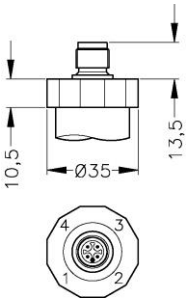


ISO 4400 (IP65)

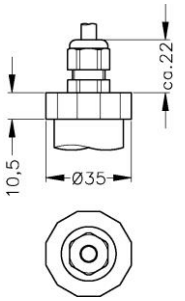
Options



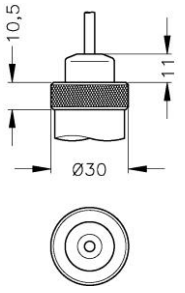
Binder series 723 (IP67)



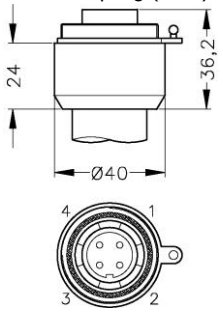
M12x1 4-polig (IP67)



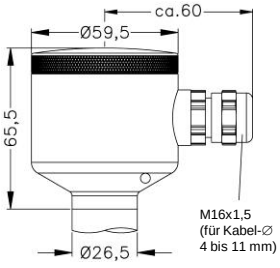
Cable gland (IP67)[5, 6]



cable outlet (IP68)[5]



Buccaneer (IP68)[7]



field housing (IP67)

[5] Cables available in various designs and lengths
[6] Standard: 2 m PVC cable without ventilation hose, optional cable with ventilation hose
[7] required with relative pressure up to and including 40 bar cable with integrated ventilation hose

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Material	
Pressure connection	Standard: stainless steel 1.4571 Option for G½“ open connection with nominal pressure up to 60 bar: PVDF Others on request.
Housing	Standard: stainless steel 1.4571 Field housing: stainless steel 1.4571 with brass cable gland, nickel-plated
Seals (wetted parts)	P_N < 100 bar: FKM / P_N ≥ 100 bar: NBR / others on request
Separating membrane	ceramic Al_2O_3 96%
Wetted parts	Pressure connection, seals, separating membrane

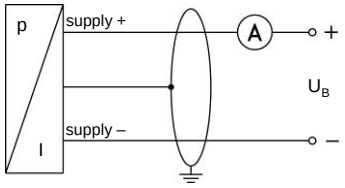
Miscellaneous	
Option SIL 2 version	According to IEC 61508 / IEC 61511
Option oxygen version	for PN ≤ 50 bar: O-rings made of V747-75 (with BAM approval); permissible maximum values 40 bar / 130° C and 50 bar / 100° C for PN > 50 bar: O-rings made of FKM 90 (with approval of the scientific coal research institute Ostrava - CZ) up to 215 bar / 95 °C
Connection cables (factory)	Capacity: conductor / screen and conductor / conductor: 160 pF/m Inductance: conductor / screen and conductor / conductor: 1 µH/m
Current consumption	Signal output current: max. 25 mA Signal output voltage: max. 7 mA
Mass	Approx. 140 g
Mounting position	any
Lifespan	> 100 x 10^6 load cycles

Pin configuration

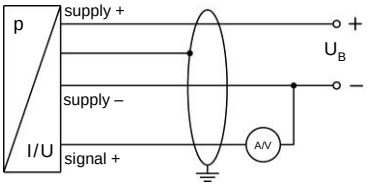
Electrical connections		ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	Buccaneer (4-pin)	Cable colors (DIN 47100)
2-wire system	supply + supply –	1 2	3 4	1 2	1 2	white brown
	Mass	Mass contact	5	4	4	yellow / green (electric screen)
3-wire system	supply + supply – signal +	1 2 3	3 4 1	1 2 3	1 2 3	white brown green
	Mass	Mass contact	5	4	4	yellow / green (electric screen)

Connection circuit diagram

2-wire system (current)



3-wire system (current / voltage)



The information in this data sheet contains the specification of the products, not the assurance of properties. Technical changes reserved.

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