





DMK 331

Industrial **Pressure Transmitter**

Ceramic Sensor

accuracy according to IEC 60770: 0.5 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA

3-wire: 0 ... 20 mA / 0 ... 10 V

others on request

Special characteristics

- pressure port G 1/2" flush for pasty and polluted media
- pressure port G 1/2" open port PVDF for aggressive media
- oxygen application

Optional versions

- IS-version Ex ia = intrinsically safe for gases and dusts
- according to IEC 61508 / IEC 61511
- customer specific versions

The industrial pressure transmitter DMK 331 with ceramic sensor has been especially designed for pasty, polluted or aggressive media and for oxygen applications at low pressure range.

As with all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331.

Preferred areas of use are



Plant and machine engineering



Energy industry



Environmental engineering (water - sewage - recycling)



Medical technology

















Industrial Pressure Transmitter

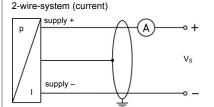
Input pressure range ¹																			
Nominal pressure gauge	[bar]	-10	0.4	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Nominal pressure absolute	[bar]	-	-	0.6	1	1,6	2,5	4	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	4	1	2	2	4	4	10	10	20	40	40	100	100	200	400	400	600	800
Burst pressure ≥	[bar]	7	2	4	4	5	7,5	12	18	30	50	75	120	180	300	500	750	1000	1100
Vacuum resistance		$p_N \ge 1$ bar: unlimited vacuum resistance $p_N < 1$ bar: on request																	
¹ PVDF pressure port possible for nominal pressure ranges up to 60 bar																			

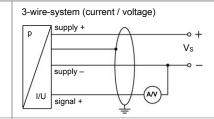
Output signal / Supply										
Standard	2-wire: $4 \dots 20 \text{ mA} / V_S = 8 \dots 32 V_{DC}$ SIL-version: $V_S = 14 \dots 28 V_{DC}$									
Option IS-protection	2-wire: 4 20 mA / V _S = 10 28 V _{DC} SIL-version: V _S = 14 28 V _{DC}									
Options 3-wire	3-wire: 0 20 mA / V _S = 14 30 V _{DC}									
	0 10 V / V _S = 14 30 V _{DC}									
Performance										
Accuracy ²	≤±0.5 % FSO									
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S min}) / 0.02 A] \Omega$									
	current 3-wire: $R_{\text{max}} = 240 \Omega$									
	voltage 3-wire: $R_{min} = 10 \text{ k}\Omega$									
Influence effects	supply: 0.05 % FSO / 10 V									
Long term stability	load: 0.05% FSO / kΩ ≤ ± 0.3 % FSO / year at reference conditions									
Response time	≥ ± 0.3 % FSO / year at reference conditions 2-wire: ≤ 10 msec									
·	3-wire: ≤3 msec									
² accuracy according to IEC 60770 – I	limit point adjustment (non-linearity, hysteresis, repeatability)									
Thermal effects (Offset and Spa	an)									
Thermal error	≤±0.2 % FSO / 10 K									
in compensated range	-25 85 °C									
Permissible temperatures										
Permissible temperatures ³ medium: -40 125 °C										
	electronics / environment: -40 85 °C									
2 C	storage: -40 100 °C									
³ for pressure port in PVDF the mediu	Im temperature is -30 60 °C									
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	10 PMO (05 0000 H)									
Vibration Shock	10 g RMS (25 2000 Hz) according to DIN EN 60068-2-6 500 g / 1 msec according to DIN EN 60068-2-27									
	300 g / Tillsec according to DIN EN 00008-2-27									
Materials										
Pressure port	standard: stainless steel 1.4404 (316 L) optional for G1/2" open port with nominal pressure range up to 60 bar: PVDF others on request									
Housing	stainless steel 1.4404 (316 L)									
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 8 mm)									
Seals	standard: FKM option: EPDM (for p _N ≤ 160 bar)									
Diaphragm	others on request									
Diaphragm Media wetted parts	ceramic Al ₂ O ₃ 96 % pressure port, seals, diaphragm									
•	ļ									
Explosion protection (only for	·									
Approval DX19-DMK 331	IBEXU 10 ATEX 1068 X / IECEX IBE 12.0027X									
DATS-DIMIC 331	stainless steel pressure port: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135 °C Da plastic pressure port: zone 1: II 2G Ex ia IIC T4 Gb zone 21: II 2D Ex ia IIIC T85°C Db									
Safety technical maximum	$U_i = 28 \text{ V}_{DC}, I_i = 93 \text{ mA}, P_i = 660 \text{ mW}, C_i \approx 0 \text{ nF}, L_i \approx 0 \mu\text{H},$									
values	the supply connections have an inner capacity of max. 27 nF to the housing									
Permissible temperatures for environment	in zone 0: -20 60 °C with p _{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 70 °C									
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 160 pF/m cable inductance: signal line/shield also signal line/signal line: 1µH/m									

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Miscellaneous		
Option SIL2 version ⁴	according to IEC 61508 / IEC 61511	
Option oxygen application	for $p_N \le 25$ bar: O-ring in FKM Vi 567 (with I permissible maximum values are 25 bar / 1	
Current consumption	signal output current: max. 25 mA	signal output voltage: max. 7 mA
Weight	approx. 140 g	
Installation position	any	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU	Pressure Equipment Directive: 2014/68/EU (module A) 5
ATEX Directive	2014/34/EU	

Wiring diagrams





Pin configuration

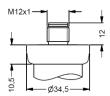
Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colour (IEC 60757)
Supply +	1	3	1	IN +	WH (white)
Supply –	2	4	2	IN -	BN (brown)
Signal + (only for 3-wire)	3	1	3	OUT+	GN (green)
Shield	ground pin 🕀	5	4	(GNYE (green-yellow)

Electrical connections (dimensions in mm)

standard 2





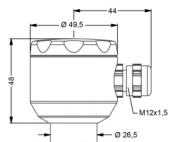




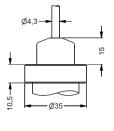


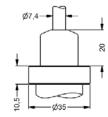
ISO 4400 (IP 65)

Binder Series 723, 5-pin (IP 67)



M12x1, 4-pin (IP 67)





compact field housing (IP 67)

cable outlet with PVC cable (IP 67) 6

cable outlet, cable with ventilation tube (IP 68) 7

universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

⁶ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C) ⁷ different cable types and lengths available, permissible temperature depends on kind of cable

only for 4 ... 20 mA / 2-wire
 this directive is only valid for devices with maximum permissible overpressure > 200 bar

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Mechanical connection (dimensions in mm) standard standard for SIL- and SIL-IS-version 33 Ø34,5 33 Ø34,5 83 **−**− Ø26,5 Ø26.5 20 SW27 SW27 17 17 4 4 G1/2" G1/2' G1/2" DIN 3852 with ISO 4400 G1/2" DIN 3852 with ISO 4400 options O-Ring 7 4 Ø10 G 1/2 G1/2" -G1/2" EN 837 G1/2" open port G1/2" semi-flush DIN 3852 8 4 4 15 4 20 G 1/4" G 1/4 1/4" NPT G1/4" DIN 3852 G1/4" EN 837 1/2" NPT 1/4" NPT $\ \Rightarrow$ metric threads and other versions on request

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 8 possible for nominal pressure ranges $p_{N} \leq 25$ bar; absolute pressure ranges on request



Ordering code DMK 331 **DMK 331** 2 5 0 absolute 2 5 1 Input [bar] 0 0 0 0 0 0 0 0 0 0 1 1 6 0 1 1 5 0 1 1 0 0 0 2 6 0 2 2 0 0 0 2 0 0 0 3 5 0 3 0 0 3 0.4 4 6 1 0.6 1.0 1.6 246 2.5 4.0 6.0 10 16 1 2 4 25 40 60 6 1 1 100 160 modifications to the specifications and materials 2 250 4 6 X 9 400 0 0 3 1 0 2 9 9 9 600 -1 ... 0 customer consult Output 4 ... 20 mA / 2-wire 0 ... 20 mA / 3-wire 0 ... 10 V / 3-wire intrinsic safety 4 ... 20 mA / 2-wire SIL2 4 ... 20 mA / 2-wire 3 F 1S SIL2 with intrinsic safety FS 4 ... 20 mA / 2-wire customer 9 consult make Accuracy 0.5 % FSO 5 reserve the right to customer consult Electrical connection male and female plug ISO 4400 male plug Binder series 723 (5-pin) 1 0 0 2 0 0 cable outlet with PVC cable (IP67) T A 0 cable outlet, We I TR0 cable with ventilation tube (IP68) ² state of engineering at the time of publishing. male plug M12x1 (4-pin) / metal M 1 0 compact field housing 8 5 0 stainless steel 1.4301 (304) 9 9 9 customer consult Mechanical connection 1 0 0 2 0 0 G1/2" DIN 3852 G1/2" EN 837 0 0 0 G1/4" DIN 3852 3 G1/4" EN 837 4 G1/2" DIN 3852 with F 0 0 semi-flush sensor 4 G1/2" DIN 3852 open pressure port Н 0 0 1/2" NPT 1/4" NPT N 0 0 N 4 0 9 9 9 represent the customer consult FKM EPDM 3 specifications given in this document customer consult Pressure port stainless steel 1.4404 (316L) PVDF В customer consult Diaphragm ceramics Al₂O₃ 96 % 2 customer consult Special version 0 0 0 0 0 7 standard oxygen application 7 customer consult The

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¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

 $^{^{2}}$ code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

³ metric threads and others on request

⁴ possible for nominal pressure ranges p $_{N}$ ≤ 25 bar; absolute pressure ranges on request

⁵ possible for nominal pressure ranges p_N ≤ 160 bar

 $^{^6}$ PVDF only with G1/2" DIN 3852 open pressure port (up to 60 bar); permissible medium temperature: -30 \dots 60 $^{\circ}\text{C}$

⁷ oxygen application with FKM-seal up to 25 bar possible