

LMK 331



Screw-In Transmitter

Ceramic Sensor

accuracy according to EN IEC 62828-2:
0.5 % span

Nominal pressure

from 0 ... 400 mbar up to 0 ... 60 bar

Output signals

2-wire: 4 ... 20 mA

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

others on request

Special characteristics

- ▶ pressure port G 3/4" flush for pasty and impure media
- ▶ pressure port PVDF for aggressive media

Optional versions

- ▶ IS-version (only for 4 ... 20mA / 2-wire):
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2 application according to IEC 61508 / IEC 61511
- ▶ customer specific versions

The screw-in transmitter LMK 331 has been especially designed for level and process measurement and is suitable for pressure measurement of liquids, oils and gases. Usage in more viscous or polluted media is possible because of the semi-flush pressure sensor.

For the usage in aggressive media we recommended the version with PVDF pressure port. Additional features like e.g. an intrinsically safe version or a functionally safe version (SIL 2) complete the range of possibilities.

Preferred areas of use are



Plant and Machine Engineering



Energy Industry



Environmental Engineering
(water – sewage – recycling)



Medical Technology



Input pressure range													
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40 ¹	60 ¹
Level	[mH ₂ O]	4	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	1	2	2	4	4	10	20	20	40	100	100	200
Burst pressure	[bar]	2	4	4	5	5	12	25	25	50	120	120	250
Vacuum resistance	[bar]	P _N ≥ 1 bar: unlimited vacuum resistance P _N < 1 bar: on request											

¹ only possible with stainless steel pressure port

Output signal / Supply		
Standard	2-wire:	4 ... 20 mA / V _S = 8 ... 32 V _{DC} SIL-version: V _S = 14 ... 28 V _{DC}
Option IS-protection ²	2-wire:	4 ... 20 mA / V _S = 10 ... 28 V _{DC} SIL-version: V _S = 14 ... 28 V _{DC}
Option 3-wire	3-wire:	0 ... 20 mA / V _S = 14 ... 30 V _{DC} 0 ... 10 V / V _S = 14 ... 30 V _{DC}

² IS-protection not possible with plastic pressure port

Performance	
Accuracy ³	≤ ± 0.5 % span
Permissible load	current 2-wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω current 3-wire: R _{max} = 500 Ω voltage 3-wire: R _{min} = 10 kΩ
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec

³ accuracy according to EN IEC 62828-2- limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (Offset and Span) / Permissible Temperatures	
Thermal error	≤ ± 0.2 % span / 10 K
in compensated range	-25 ... 85 °C
Permissible temperatures ⁴	medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C

⁴ for pressure port of PVDF the permissible 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	
Vibration	10 g RMS (25 ... 2000 Hz) according to DIN EN 60068-2-6
Shock	500 g / 1 msec according to DIN EN 60068-2-27

Materials			
Pressure port / housing	standard:	pressure port	housing
	options for P _N ≤ 25 bar:	stainless steel 1.4404 (316L) PVDF	stainless steel 1.4404 (316L) PVDF
Option field housing	stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 2...8 mm)		
Seals	standard: FKM options: EPDM, NBR, others on request		
Diaphragm	ceramics Al ₂ O ₃ 96 %		
Media wetted parts	pressure port, seals, diaphragm		

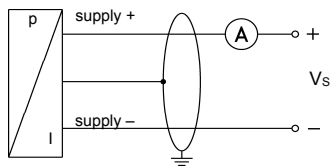
Explosion protection (only for 4 ... 20 mA / 2-wire)	
Approval DX9-LMK 331 only for stainless steel pressure port	IBExU10ATEX1122 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135°C Da
Safety technical maximum values	U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i ≈ 0 nF, L _i ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing
Ambient temperature range	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 (lower temperature limit depends on the type of cable used)
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: 1 μH/m

Miscellaneous	
Option SIL ⁵ 2 application	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 5 mA
Weight	approx. 150 g
Installation position	any
Operational life	> 100 x 10 ⁶ pressure cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

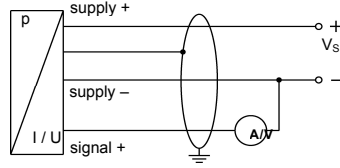
⁵ only for 4...20mA / 2-wire

Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

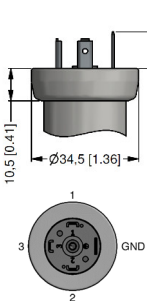


Pin configuration

Electrical connections	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
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 contact	5	4		gn/ye (green / yellow)

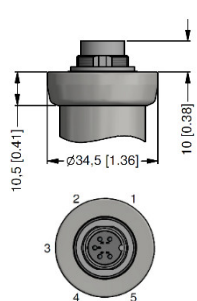
Electrical connections (dimensions in mm)

standard

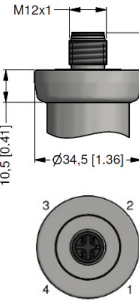


ISO 4400 (IP 65)

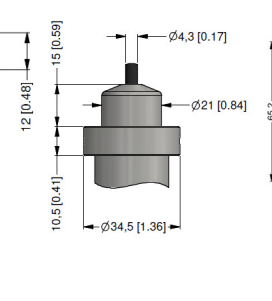
option



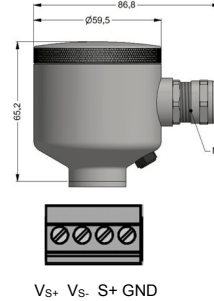
Binder Series 723 5-pin (IP 67)



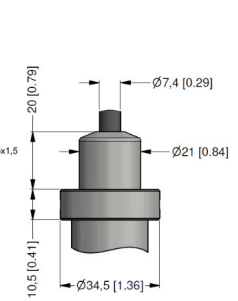
M12x1 4-pin (IP 67)



cable gland PG7/cable length specify (IP 67)⁶



field housing (IP 67)



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

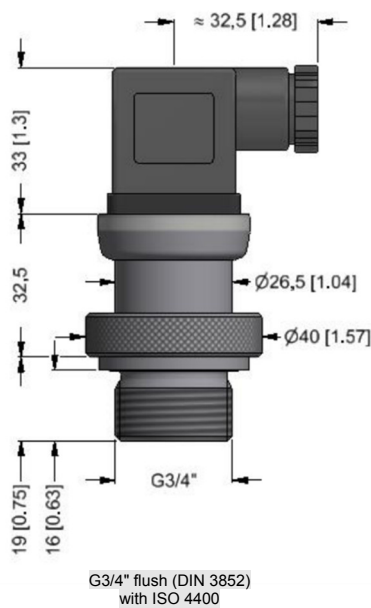
⇒ universal stainless steel housing 1.4404 with cable gland M20x1.5 (ordering code 880) and other versions on request

⁶ standard: 2 m PVC-cable without ventilation tube (permissible temperature: -5 ... 70°C)

⁷ different cable types and length available, permissible temperature depends on kind of cable

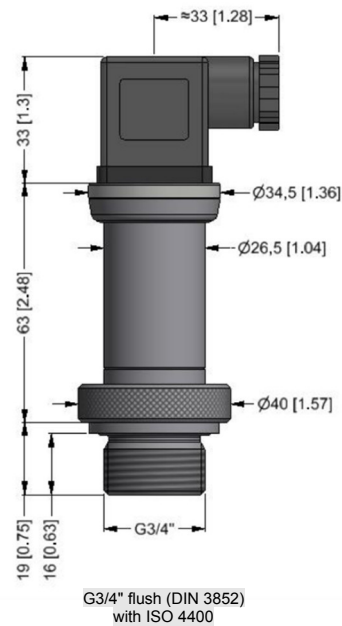
Mechanical connection (dimensions in mm)

standard



G3/4" flush (DIN 3852) with ISO 4400

standard for SIL- and SIL-Ex-version



G3/4" flush (DIN 3852) with ISO 4400

This data sheet contains product specification. properties are not guaranteed. Subject to change without notice.

Ordering code LMK 331

1.3.2021

LMK 331

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Pressure			
in bar	4	6	0
in m H ₂ O	4	6	1
Input	[mH ₂ O]	[bar]	
0 ... 4	0 ... 0,4		4 0 0 0
0 ... 6	0 ... 0,6		6 0 0 0
0 ... 10	0 ... 1		1 0 0 1
0 ... 16	0 ... 1,6		1 6 0 1
0 ... 25	0 ... 2,5		2 5 0 1
0 ... 40	0 ... 4		4 0 0 1
0 ... 60	0 ... 6		6 0 0 1
0 ... 100	0 ... 10		1 0 0 2
0 ... 160	0 ... 16		1 6 0 2
0 ... 250	0 ... 25		2 5 0 2
0 ... 400	0 ... 40 ¹		4 0 0 2
0 ... 600	0 ... 60 ¹		6 0 0 2
Customer			9 9 9 9
Analogue output			
4...20 mA / 2-wire			1
0 ... 20 mA / 3-wire			2
0...10 V / 3-wire ⁵			3
Intrinsic safety Ex ia 4 ... 20 mA / 2-wire ²			E
SIL2, 4 ... 20 mA / 2-wire			1S
SIL2, Intrinsic safety 4 ... 20 mA / 2-wire ²			ES
Ex nA "n" 4 ... 20 mA / 2-wire (connector 105)			N
Customer			9
Accuracy			
1 %			8
0,5 %			5
1 % including Calibration Certificate			U
0,5 % including Calibration Certificate			T
Table of measured values for accuracy 0,5 %			N
Customer			9
Electrical connection			
Connector DIN 43650 (ISO 4400) (IP 65)		1 0 0	
Connector ISO 4400 (IP 65) + silicone seals for Ex nA		1 0 5	
Connector Binder Serie 723 5-pin (IP 67)		2 0 0	
Cable gland PG7 / cable length specify (IP 67)		4 0 0	
+ PVC cable / 1 m			
Connector Buccaneer (IP 68)		5 0 0	
Field housing stainless steel, cable gland M 16 x 1,5 (IP 67)		8 0 0	
Field housing stainless steel, cable gland M 20 x 1,5 (IP 67)		8 8 0	
Connector DIN 43650 (ISO 4400) - Potting compound inside (IP 67)		E 0 0	
Connector M12 x 1, 4-pin (IP 67)		M 0 0	
Connector M12 x 1, 4-pin (IP 67) - metal		M 1 0	
Cable outlet, cable with ventilation tube (IP68) ³		T R 0	
+ PVC cable / 1 m			
Customer		9 9 9	
Mechanical connection			
G 3/4" (DIN 3852) - flush		K 0 0	
Customer		9 9 9	
Seals			
Viton (FKM)			1
EPDM			3
NBR			5
Customer			9
Housing			
Stainless steel 1.4404 (316 L)			1
PVDF (P _N ≤ 25 bar) ⁴			B
Customer			9
Diaphragm			



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The company BD SENSORS s.r.o. is certified by TÜV SÜD Czech according to the standard ISO 9001.



Ceramic Al ₂ O ₃ 96 %	2			
Ceramic Al ₂ O ₃ 96 % with PTFE foil (accuracy ≥ 1%)	3			
Customer	9			
Special version				
Standard		0	0	0
Customer		9	9	9

0,-...without additional charge

On request...in accordance with the producer

Surcharges for calibration are not subject to any discounts. Subject to change. □

This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet.

BD SENSORS reserves the right to change sensor specifications without further notice.

1 only possible for pressure port of stainless steel

2 intrinsic safety not possible with plastic pressure port

3 code TR0 = PVC cable, cable with ventilation tube available in different types and lengths; cable not included in the price

4 permissible medium temperature: -30 ... 60 °C

5 maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m



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