BD SENSORS®
pressure measurement

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

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.

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

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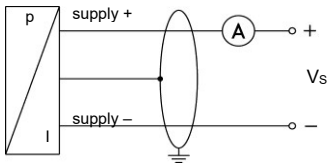
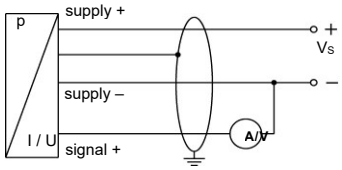
Input pressure range													
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60
Level	[mH_2O]	4	6	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	1	2	2	4	4	10	20	20	40	100	100	200
Burst pressure	[bar]	2	4	4	5	5	12	25	25	50	120	120	250
Vacuum resistance	[bar]	$P_N \geq 1$ bar: unlimited vacuum resistance $P_N < 1$ bar: on request											

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-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}		
Performance			
Accuracy [1]	≤ ± 0.5 % span		
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ current 3-wire: $R_{max} = 500\ \Omega$ voltage 3-wire: $R_{min} = 10\ k\Omega$		
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ		
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec		
[1] 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	medium: -40 ... 125 °C storage: -40 ... 100 °C	electronics / environment: -40 ... 85 °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		pressure port	housing
	standard: options for $P_N \leq 25$ bar:	stainless steel 1.4404 (316L)	stainless steel 1.4404 (316L)
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_2O_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, $C_i \approx 0$ nF, $L_i \approx 0$ 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[2] 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		
[2] only for 4...20mA / 2-wire			
Wiring diagrams			

2-wire-system (current)



3-wire-system (current / voltage)

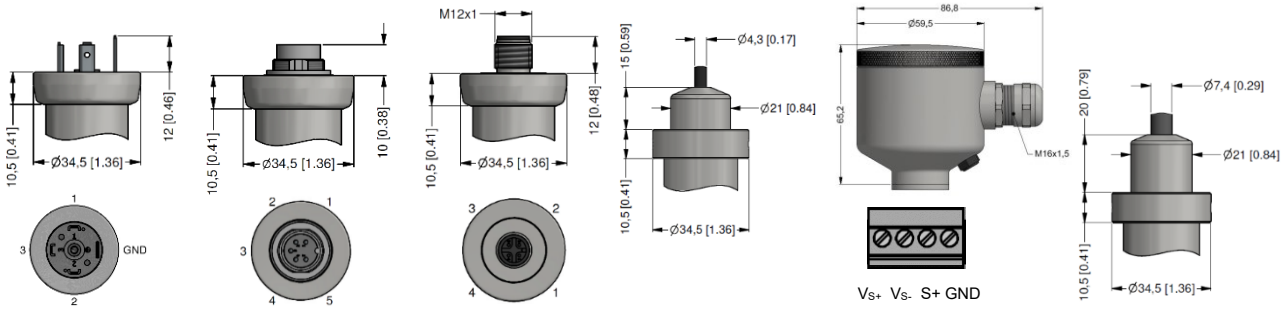


Pin configuration

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 **option**



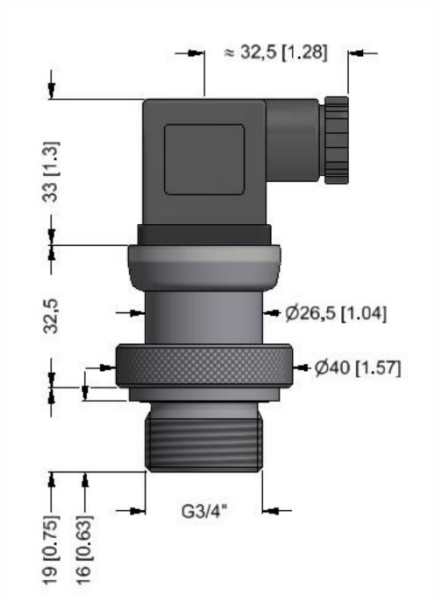
ISO 4400 (IP 65) | Binder Series 723 5-pin (IP 67) | M12x1 4-pin (IP 67) | cable gland PG7/cable length specify (IP 67) [6] | field housing (IP 67) | cable outlet, cable with ventilation tube (IP 68)[7]

⇨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

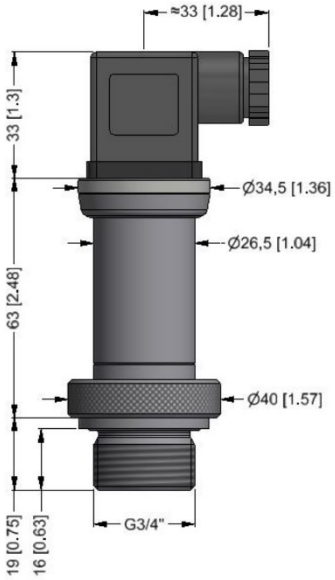
Mechanical connection (dimensions in mm)

standard



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

standard for SIL- and SIL-Ex-version



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

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Ordering code LMK 331

23.08.2024

LMK 331 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐

Pressure			Code
in bar			4 6 0
in m H_2O			4 6 1
Input	**[mH_2O]**	**[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	4 0 0 2
	0 … 600	0 … 60	6 0 0 2
Customer			9 9 9 9

Analogue output	Code
4…20 mA / 2-wire	1
0 … 20 mA / 3-wire	2
0…10 V / 3-wire	3
Intrinsic safety Ex ia 4 … 20 mA / 2-wire	E
SIL2, 4 … 20 mA / 2-wire	1S
SIL2, Intrinsic safety 4 … 20 mA / 2-wire	ES
Customer	9

Accuracy	Code
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	Code
Connector DIN 43650 (ISO 4400) (IP 65)	1 0 0
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 (IP 68)[1]	T R 0
+ PVC cable / 1 m	
Customer	9 9 9

Mechanical connection	Code
G 3/4" (DIN 3852) - flush	K 0 0
Customer	9 9 9

Seals	Code
Viton (FKM)	1
EPDM	3
NBR	5
Customer	9

Housing

Stainless steel 1.4404 (316 L)	1				
Diaphragm					
Ceramic Al_2O_3 96 %	2				
Ceramic Al_2O_3 96 % with PTFE foil (accuracy ≥ 1%)- not possible used for underpressure	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 code TR0 = PVC cable, cable with ventilation tube available in different types and lengths; cable not included in the price

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