

# **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 semiflush 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

















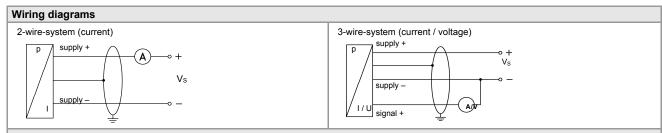


Screw-In Transmitter

Input pressure range													
Nominal pressure gauge	[bar]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40 <sup>1</sup>	60 <sup>1</sup>
Level	[mH <sub>2</sub> O]	4	4 6 10 16 25 40 60 100 160 250 400								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 <sub>N</sub> ≥ 1 bar: unlimited vacuum resistance													
P <sub>N</sub> < 1 bar: on request													
<sup>1</sup> only possible with stainless steel pressure port													

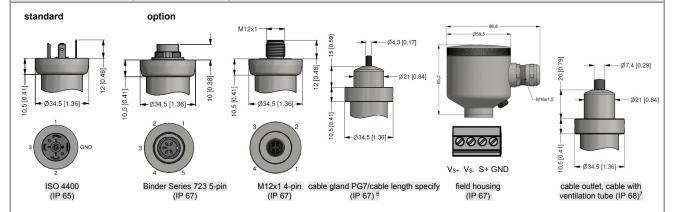
Standard   2-wire	Output signal / Supply							
Option   Sprotection   2		2-wire: 4 20 mA / Vs =	8 32 Vpc SII -version: V	's = 14 28 V <sub>DC</sub>				
3-wire   3-wire   3-wire   3-wire   0 20 m A / Vs = 14 30 Vsc   0 10 V / Vs = 14 30 Vsc   0 10 Vsc   0								
3 / S. Protection not possible with plastic pressure port  Performance  Accuracy 3				3 20 . DC				
Performance         Accuracy 3         ≤ ± 0.5 % span           Permissible load         current 3-wire: R <sub>max</sub> = 500 Ω current 5-wire: R <sub>m</sub>	opasii o iiiio							
Performance           Accuracy 3         ≤ ± 0.5 % span           Permissible load         current 3-wire: R <sub>max</sub> = 500 Ω current 3-wire: R <sub>max</sub> = 500 Ω current 3-wire: R <sub>max</sub> = 500 Ω current 3-wire: Span 1 fo V load: 0.05 % span 1 fo V lo	<sup>2</sup> IS-protection not possible with plastic							
Accuracy   3		·						
Permissible load		< + 0.5 % span						
Courrent 3-wire:   R <sub>min</sub> = 50 Ω Ω   No	•		[(\/o - \/o \ \ \ / 0 02 A1 O					
voltage 3-wire:   R <sub>min</sub> = 1 0 KΩ	T CITII33IDIC IOAG							
Influence effects   Supply   O.0.5 % span / 1.0 V   Ioad: O.0.5 % span / Expanse   Ioad: O.0.5 % span / Ioad: O.0.5 % span		111-111						
load:	Influence effects							
Response time   2-wire: ≤ 10 msec   3-wire: ≤ 3								
accuracy according to EN IEC 6228-2- 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 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 4   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 6   medium: 40 125 °C   In compensated range   -25 8 °C   Permissible temperatures 6   medium: 40 125 °C   Permissible temperatures 6   medium: 40 125 °C   In compensation of PVDF the permissible temperature is -30 80 °C   Permissible temperatures 6   medium: 40 125 °C   Permissible temperatures 6   medium: 40 125 °C   Permissible temperature range   -25 8 °C °C °C with pam 0 stan 4 °C view pam 0 st	Response time	·						
Thermal error   \$\leq \times  20.2 % span / 10 K   storage: 40.2 \text{ 3.5 mcd of C   storage: 40.2 \text{ 3.6 mcd of C   storage:								
Thermal error	<sup>3</sup> accuracy according to EN IEC 62828-	2– limit point adjustment (non-linear	ity, hysteresis, repeatability)					
Thermal error								
In compensated range	<u> </u>	<u>'</u>						
Permissible temperatures 4   medium: 40 125 °C   storage: 40 100 °C								
Storage: -40 100 °C	<u> </u>		electronics / env	vironment: -40 85 °C				
For pressure port of PVDF the permissible temperature is -3060 °C  Electrical protection  Reverse polarity protection B No 8068-2-2  Reverse polarity EN 80068-2-2  Reverse polarity EN 80068-2-2  Reverse polarity EN 80068-2-2  Reverse polarity EN 80068-2-2  Results En 80068-2-2  Reverse polarity EN 80068-2-2  Reverse polarity EN 80068-2-2  Reverse polarity EN 80068-2-2  Results En 80068-2-2  Reverse polarity EN 80068-2-2  Results En 80068-2-2  Reverse port   housing    stainless steel 1.4404 (316L)   plus    stainless teel 1.4404 (316L)   plus    stainless steel 1.4404 (316L)   pl	- Importation		5,550,51,1557 611					
Electrical 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: potions for P <sub>N</sub> ≤ 25 bar: PVDF         pVDF         PVDF           Option field housing         stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm standard: potions: pPDM, NBR, others on request         pressure port seals, diaphragm           Diaphragm         ceramics Al₂O₃ 96 %         Media wetted parts         pressure port, seals, diaphragm           Explosion protection (only for 4 20 mA / 2 wire)         BEXU10ATEX1122 X           Approval DX9-LMK 331 only for stainless steel pressure port         If 1 G Ex ia IIC T4 Ga zone 0: If 1 DE Ex ia IIC T4 Ga zone 0: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia IIC T4 Ga zone 20: If 1 DE Ex ia	<sup>4</sup> for pressure port of PVDF the permis							
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 / stainless steel 1.4404 (316L)         bousing           Stainless steel port / housing         staindard: standard: stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm           Seals         standard: potions: EPDM, NBR, others on request         FKM         pressure port seals, diaphraym           Seals         pressure port, seals, diaphraym         Pressure port seals, diaphraym         Pressure port seals, diaphraym           Explosion protection (only for 4 20 mA / 2-wire)         IBEXUIDATEX1122 X zone 0: II 16 Ex ia IIC T4 Ga zone 20: II 16 Ex ia IIC T4 Ga zone 20: II 10 Ex ia III T135°C Da           Safety technical maximum values         II 2 EX I, I = 93 mA, PI = 660 mW, Ci ≈ 0 nF, Li ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing in zone 0: zone 0: Go 0° with pem 0.8 bar up to 1.1 bar in zone 0: zone 0: Go 0° with pem 0.8 bar up to 1.1 bar in zone 0: zone 0: Go 0° with pem 0.8 bar up to 1.1 bar in zone 0: zone 0: Go 0° with pem 0.8 bar up to 1.1 bar in zone 0: zone 0: Go 0° with pem								
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: options for P <sub>N</sub> ≤ 25 bar: PVDF 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 Al₂O₃ 96 %  Media wetted parts pressure port stainless steel pressure port stainless steel pressure port pressure port stainless steel pressure port pressure port pressure port stainless according to EX 10 to		nermanent						
Electromagnetic compatibility         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 60068-2-7         Materials         Pressure port / housing         standard: options for P <sub>N</sub> ≤ 25 bar: PVDF       pressure port   housing       stainless steel 1.4404 (316L) pVDF         Option field housing       stainless steel 1.4301 (304): cable gland M16x1.5, brass nickel plated (clamping range 28 mm standard: FKM options: EPDM, NBR, others on request         Seals       standard: FKM options: PDM, NBR, others on request         Diaphragm       ceramics Al₂O₃ 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 scales, diaphragm         Safety technical maximum values         U <sub>1</sub> = 28 V, I <sub>1</sub> = 93 mA, P <sub>1</sub> = 660 mW, C <sub>1</sub> ≈ 0 nF, L <sub>1</sub> ≈ 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 <sub>am</sub> 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 us connecting cables cable adapacitance: signal line / shield also signal line / signal line: 160 pF/m         Connecting cables       cable inductance: sign	· · · · · · · · · · · · · · · · · · ·							
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: options for P <sub>N</sub> ≤ 25 bar: option field housing         bound field four proper prof prof prof stainless steel 1.4404 (316L) prof prof stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 2 8 mm standard: FKM options: EPDM, NBR, others on request           Diaphragm         ceramics Al₂O₂ 96 %         EPDM, NBR, others on request           Back options in protection (only for 4 20 m / 2-wire)         Explosion protection (only for 4 20 m / 2-wire)           Approval DX9-LMK 331 only for stainless steel pressure port stainless steel pressure port stainless steel pressure port port stainless steel pressure port port sone 0: II 10 Ex ia IIIC T4 Ga zone 2: II 10 Ex ia IIIC T4 Ga zone								
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       by pressure port / stainless steel 1.4404 (316L)         Option field housing       stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm         Seals       stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm         Seals       stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm         Seals       stainless steel 1.4404 (316L)       PVDF         Diaphragm       ceramics Al₂O₃ 96 %         Media wetted parts       pressure port, seals, diaphragm         Explosion protection (only for 4 20 mA / 2-wire)       IBEXU10ATEX1122 X         Approval DX9-LMK 331 only for stainless steel pressure port       IBEXU10ATEX1122 X       Zone 0: II 10 Ex ia IIC T4 Ga         Safety technical maximum values       U = 28 V, I, = 93 mA, P, = 660 mW, C; ≈ 0 nF, L; ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing         Ambient temperature range       in zone 1 or higher: -40/-20 70 °C (lower temperature limit depends on the type of cable use 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 <th< td=""><td></td><td>connected and minimality decera</td><td>ing to Errorozo</td><td></td></th<>		connected and minimality decera	ing to Errorozo					
Shock       500 g / 1 msec       according to DIN EN 60068-2-27         Materials         Pressure port / housing       pressure port       housing         standard:       pressure port       housing         Stainless steel 1.4404 (316L)       pressure port       stainless steel 1.4404 (316L)         Option field housing       stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm         Seals       FKM         options:       EPDM, NBR, others on request         Diaphragm       ceramics Al₂O₃ 96 %         Media wetted parts       Explosion protection (only for 4 m. 20 mA / 2-wire)         Approval DX9-LMK 331 only for stainless steel pressure port       IBEXUIOATEX1122 X         cone 0: Il 1G Ex ia IIIC T4 Ga         zone 0: Il 1 DE x ia IIIC T4 Ga         zone 0: Il 1 DE x ia IIIC T4 Ga         zone 0: Il 1 DE x ia IIIC T4 Ga         zone 0: Il 1 DE x ia IIIC T4 Ga         zone 0: Il 2 - 20 70 °C (lower temperature limit depends on the type of cable use         Connecting cables       cable inductance: signal line/shield also signal line / signal line: 14 μH/m         Miscellaneous <th c<="" td=""><td></td><td>40 = DMC (25 2000 H=)</td><td>and a DIN EN COCCO 2 C</td><td></td></th>	<td></td> <td>40 = DMC (25 2000 H=)</td> <td>and a DIN EN COCCO 2 C</td> <td></td>		40 = DMC (25 2000 H=)	and a DIN EN COCCO 2 C				
Materials         Pressure port / housing       standard: options for P <sub>N</sub> ≤ 25 bar: options for P <sub>N</sub> ∨								
Pressure port / housing $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Shock	500 g / 1 msec	according to DIN EN 60068-2-27					
standard: option for P <sub>N</sub> ≤ 25 bar: option for P <sub>N</sub> ≤ 25 bar: option field housing       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 28 mm         Seals       standard: FKM options: EPDM, NBR, others on request         Diaphragm       ceramics Al₂O₃ 96 %         Media wetted parts       pressure port, seals, diaphragm         Explosion protection (only for 4 20 mA / 2-wire)       20 mA / 2-wire)         Approval DX9-LMK 331 only for stainless steel pressure port       II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIC T135°C Da         Safety technical maximum values are port in zone 20: II 1D Ex ia IIC T135°C Da       II 1D Ex ia IIC T135°C Da         Safety technical maximum values in zone 0: II 1D Ex ia IIC T135°C Da       II 1D Ex ia IIC T135°C Da         Ambient temperature range in zone 0: -20 60 °C with patm 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 use cable capacitance: signal line/shield also signal line / signal line: 160 pF/m         Connecting cables (by factory)       cable inductance: signal line/shield also signal line / signal line: 1 µH/m         Miscellaneous         Option SIL <sup>5</sup> 2 application       according to IEC 61508 / IEC 61511         Current consumption       signal output current: max. 25 mA signal output voltage: max. 5 mA	Materials							
Option field housing  Stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm standard: FKM options: EPDM, NBR, others on request  Diaphragm  Ceramics Al₂O₃ 96 %  Media wetted parts  Explosion protection (only for 4 20 mA / 2-wire)  Approval DX9-LMK 331 only for stainless steel pressure port  Zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIC T135°C Da  Safety technical maximum values  Ui = 28 V, Ii = 93 mA, Pi = 660 mW, Ci ≈ 0 nF, Li ≈ 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 patm 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 use signal line/shield also signal line / signal line: 1 μH/m  Miscellaneous  Option SIL⁵ 2 application  Corrections approx. 150 g  approx. 150 g  Diaphragm  Standard: FKM Option SIL € 2014/30/EU  PVDF  PVDF  PVDF  PVDF  PVDF  PVDF  PVDF  Annies (clamping range 28 mm signal declarace is placed (clamping range 28 mm signal declarace). The standard in sequence is placed (clamping range 28 mm signal output voltage: max. 5 mA  PVEDF  PVDF  PVDF  PVDF  Standard: FKM Options: EPDM, NBR, others on request  Standard: pEDM, NB, Classing light (1.1 approximation) persone	Pressure port / housing							
Option field housing       stainless steel 1.4301 (304); cable gland M16x1.5, brass nickel plated (clamping range 28 mm standard: ptonions: EPDM, NBR, others on request         Seals       standard: ptonion: EPDM, NBR, others on request         Diaphragm       ceramics Al₂O₃ 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 IIIC T135°C Da         Safety technical maximum values       U₁ = 28 V, I₁ = 93 mA, P₁ = 660 mW, C₁ ≈ 0 nF, L₁ ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing         Ambient temperature range       in zone 0:			` ,	` ′				
Seals       standard: options: EPDM, NBR, others on request         Diaphragm       ceramics Al₂O₃ 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         Safety technical maximum values       U₁ = 28 V, I₁ = 93 mA, P₁ = 660 mW, C₁ ≈ 0 nF, L₁ ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing         Ambient temperature range       in zone 0:		-p						
Diaphragm ceramics Al₂O₃ 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 20 mB / 2 me 0: Il 1 G Ex ia IIC T4 Ga 20 m2 / 2 me 0: Il 1 D Ex ia IIIC T135°C Da  Safety technical maximum values Ui = 28 V, Ii = 93 mA, Pi = 660 mW, Ci ≈ 0 nF, Li ≈ 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 patm 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 cable capacitance: signal line/shield also signal line / signal line: 160 pF/m (by factory) cable inductance: signal line / shield also signal line / signal line: 1 μH/m  Miscellaneous  Option SIL <sup>5</sup> 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 106 pressure cycles  CE-conformity EMC Directive: 2014/30/EU			able gland M16x1.5, brass nickel p	olated (clamping range 28 mm)				
Diaphragm         ceramics Al₂O₃ 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 IIIC T4 Ga zone 20: III 1D Ex ia IIIC T135°C Da           Safety technical maximum values         U₁ = 28 V, I₁ = 93 mA, P₁ = 660 mW, C₁ ≈ 0 nF, L₁ ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing           Ambient temperature range         in zone 0:	Seals							
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 IIIC T4 Ga zone 20: II 1D Ex ia IIIC T135°C Da         Safety technical maximum values       Ui = 28 V, Ii = 93 mA, Pi = 660 mW, Ci ≈ 0 nF, Li ≈ 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 patm 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 capacitance: signal line/shield also signal line / signal line: 160 pF/m (by factory)         Connecting cables       cable capacitance: signal line /shield also signal line / signal line: 1 μH/m         Miscellaneous       Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles         CE-conformity       EMC Directive: 2014/30/EU			ers on request					
Explosion protection (only for 4 20 mA / 2-wire)  Approval DX9-LMK 331 only for stainless steel pressure port  Safety technical maximum values  Ambient temperature range  Ambient temperature range  Connecting cables  (by factory)  Miscellaneous  Option SIL <sup>5</sup> 2 application  Current consumption  Signal output current: max. 25 mA  Weight  Approval DX9-LMK 331 only for stainless steel pressure port  II 1G Ex ia IIC T4 Ga  zone 20: II 1D Ex ia IIIC T135°C Da  Safety technical maximum values  U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> ≈ 0 μH, the supply connections have an inner capacity of max. 27 nF to the housing  in zone 0: -20 60 °C with patm 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 use 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 <sup>5</sup> 2 application  Current consumption  signal output current: max. 25 mA signal output voltage: max. 5 mA  Weight  approx. 150 g  Installation position  Operational life  > 100 x 10 <sup>6</sup> pressure cycles  CE-conformity  EMC Directive: 2014/30/EU								
Approval DX9-LMK 331 only for stainless steel pressure port zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135°C Da  Safety technical maximum values U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> $\approx$ 0 nF, L <sub>i</sub> $\approx$ 0 µH, the supply connections have an inner capacity of max. 27 nF to the housing in zone 0: -20 60 °C with p <sub>atm</sub> 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 use cable capacitance: signal line/shield also signal line / signal line: 160 pF/m signal line / signal line: 1 µH/m  Miscellaneous  Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles  CE-conformity EMC Directive: 2014/30/EU	•		<u>n</u>					
stainless steel pressure port  zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135°C Da  Safety technical maximum values  U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> $\approx$ 0 nF, L <sub>i</sub> $\approx$ 0 $\mu$ H, the supply connections have an inner capacity of max. 27 nF to the housing  Ambient temperature range in zone 0: -20 60 °C with patm 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 use Connecting cables (by factory)  Connecting cables (cable capacitance: signal line/shield also signal line / signal line: 160 pF/m cable inductance: signal line /shield also signal line / signal line: 1 $\mu$ H/m  Miscellaneous  Option SIL <sup>5</sup> 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  Operational life  > 100 x 10 <sup>6</sup> pressure cycles  CE-conformity  EMC Directive: 2014/30/EU		20 mA / 2-wire)						
Safety technical maximum values  Safety technical maximum values  U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> $\approx$ 0 nF, L <sub>i</sub> $\approx$ 0 $\mu$ H, the supply connections have an inner capacity of max. 27 nF to the housing  Ambient temperature range  in zone 0:     in zone 1 or higher:     in zone 1 or higher:     cable capacitance:     signal line/shield also signal line / signal line: 160 pF/m     (by factory)  Connecting cables (by factory)  Miscellaneous  Option SIL <sup>5</sup> 2 application  Current consumption  signal output current:     max. 25 mA  signal output voltage:     max. 5 mA  Weight  line   Signal line   Signal output voltage:     max. 5 mA  Signal output voltage:     max. 5 mA  Signal output voltage:     max. 5 mA  Weight  Signal line   Signal output voltage:     max. 5 mA  Signal output voltage:     max. 5 mA  Signal output voltage:     max. 5 mA  Weight  Signal output voltage:     max. 5 mA  Signal output voltage:     max. 5 mA  Weight  Signal output voltage:     max. 5 mA								
Safety technical maximum values $U_i = 28 \text{ V}, \ I_i = 93 \text{ mA}, \ P_i = 660 \text{ mW}, \ C_i \approx 0 \text{ nF}, \ L_i \approx 0 \text{ µH}, \ the supply connections have an inner capacity of max. 27 nF to the housing}$ Ambient temperature range in zone 0: -20 60 °C with patm 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 use signal line / signal line / signal line: 160 pF/m (by factory) cable inductance: signal line/shield also signal line / signal line: 1 $\mu$ H/m   Miscellaneous  Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles  CE-conformity EMC Directive: 2014/30/EU	stainless steel pressure port							
the supply connections have an inner capacity of max. 27 nF to the housing  Ambient temperature range in zone 0:     in zone 1 or higher:     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 <sup>5</sup> 2 application     signal output current:     current consumption     signal output current:     max. 25 mA     signal output voltage:     max. 5 mA  Weight     approx. 150 g  Installation position  Operational life     > 100 x 10 <sup>6</sup> pressure cycles  CE-conformity  EMC Directive: 2014/30/EU	0.5.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.							
Ambient temperature range in zone 0:	Safety technical maximum values							
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Connecting cables (by factory)       cable capacitance: signal line/shield also signal line / signal line: 160 pF/m signal line: 1 μH/m         Miscellaneous         Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles         CE-conformity       EMC Directive: 2014/30/EU	Ambient temperature range							
Miscellaneous         Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles         CE-conformity       EMC Directive: 2014/30/EU	Connecting cables							
Miscellaneous  Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles   CE-conformity   EMC Directive: 2014/30/EU	•							
Option SIL <sup>5</sup> 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 <sup>6</sup> pressure cycles   CE-conformity   EMC Directive: 2014/30/EU	` • • • • • • • • • • • • • • • • • • •	ouble inductance. Signal line	70 III aloo signal lille / signal lill	ο. τ μι πιτ				
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 <sup>6</sup> pressure cycles       CE-conformity     EMC Directive: 2014/30/EU		dia - to IEO 04500 / IEO	24544					
Weight     approx. 150 g       Installation position     any       Operational life     > 100 x 10 <sup>6</sup> pressure cycles       CE-conformity     EMC Directive: 2014/30/EU	• • • • • • • • • • • • • • • • • • • •			tana				
Installation position     any       Operational life     > 100 x 10 <sup>6</sup> pressure cycles       CE-conformity     EMC Directive: 2014/30/EU	· · · · · · · · · · · · · · · · · · ·	5 1	∠o mA signal output vol	tage: max. 5 mA				
Operational life       > 100 x 10 <sup>6</sup> pressure cycles         CE-conformity       EMC Directive: 2014/30/EU								
CE-conformity EMC Directive: 2014/30/EU								
	<u> </u>							
A LEA LIBERTIVE //114/34/ETI								
5 only for 420mA / 2-wire		2014/34/EU						

## Screw-In Transmitter



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	<b>(1)</b>	gn/ye (green / yellow)

#### Electrical connections (dimensions in mm)



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

# Mechanical connection (dimensions in mm) standard standard for SIL- and SIL-Ex-version ≈ 32,5 [1.28] 33 [1.3]-33 [1.3] Ø34,5 [1.36] Ø26,5 [1.04] 63 [2.48] Ø26,5 [1.04] Ø40 [1.57] Ø40 [1.57] G3/4" 19 [0.75]-16 [0.63]-19 [0.75] – 16 [0.63] – G3/4 G3/4" flush (DIN 3852) with ISO 4400 G3/4" flush (DIN 3852) with ISO 4400

BD SENSORS® pressure measurement

LMK331\_EN\_22.09.2022

This data sheet contains product specification, properties are not quaranteed. Subject to change withaut notice

 $<sup>^6</sup>$  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



	Ordering co	ode <u>L</u>	ΜK	( 3 <u>31</u>			į		į								
1.3.2021				_		, ,		_		_	_	_	_				_
LMK 331	<u> </u>	Ш	Ш	-	-L	<b> -</b>  _		_ -	-Ц		_ -	-Ц	-	-L	-L		_
Pressure																	
in bar	4 6 0		П				П	Т		Т						П	Т
in m H <sub>2</sub> O	4 6 1		П														
Input [mH <sub>2</sub> O] [bar]																	
0 4 0 0,4		4 0 0	0				П	Т		Т						П	т
0 6 0 0,6		600						Т									
0 10 0 1		1 0 0	1														
0 16 0 1,6		1 6 0															
0 25 0 2,5		2 5 0	1														
0 40 0 4		4 0 0	1					Т									
0 60 0 6		600	1														
0 100 0 10		1 0 0						Т									
0 160 0 16		1 6 0	2														
0 250 0 25		2 5 0															
0 400 0 40 <sup>1</sup>		4 0 0															
0 600 0 60 <sup>1</sup>		600															
Customer		9 9 9															
Analogue output																	
420 mA / 2-wire				1													
0 20 mA / 3-wire				2													
010 V / 3-wire <sup>5</sup>				3													
Intrinsic safety Ex ia 4 20 mA / 2-wire <sup>2</sup>				E													
SIL2, 4 20 mA / 2-wire				1S													
SIL2, Intrinsic safety 4 20 mA / 2-wire <sup>2</sup>				ES													
Ex nA "n" 4 20 mA / 2-wire (connector 105)				N													
Customer				9													
Accuracy								۰									
1 %				_	8					7			_				_
0,5 %					5												
1 % including Calibration Certificate					U												
0,5 % including Calibration Certificate					Т												
Table of measured values for accuracy 0,5 %					N												
Customer					9												
Electrical connection																	
Connector DIN 43650 (ISO 4400) (IP 65)			_	_	_	1	0	0		7	_	_	_				
Connector ISO 4400 (IP 65) + silicone seals for Ex nA						1		5									
Connector Binder Serie 723 5-pin (IP 67)						2		0									
Cable gland PG7 / cable length specify (IP 67)						4		0									
+ PVC cable / 1 m																	
Connector Buccaneer (IP 68)						5	0	0									
Field housing stainless steel, cable gland M 16 x 1,5 (IP)	3 <b>7</b> \					8		0									
Field housing stainless steet, cable gland M 20 x 1,5 (IP of Field housing stainless steet, cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing stainless steet), cable gland M 20 x 1,5 (IP of Field housing steet), cabl	,					8		0									
Connector DIN 43650 (ISO 4400) - Potting compound ins						8 E		0									
Connector M12 x 1, 4-pin (IP 67)	side (II- UI)					M		0									
Connector M12 x 1, 4-pin (IP 67)  Connector M12 x 1, 4-pin (IP 67) - metal						M	1										
						T											
Cable outlet, cable with ventilation tube (IP68) <sup>3</sup>						ı	R	0								Ш	
+ PVC cable / 1 m																	
Customer						9	9	9									
Mechanical connection									1/								
G 3/4" (DIN 3852) - flush									K								
Customer									9	9	9						
Seals Viton (EKM)												,					
Viton (FKM)												1					
EPDM												3					
NBR Customer												5					
Customer												9					
Housing																	
Stainless steel 1.4404 (316 L)													1				$\perp$
PVDF (P <sub>N</sub> ≤ 25 bar) <sup>4</sup>													В				
Customer													9				
Diaphragm																	



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





