

# LMK 351

## Screw-in Transmitter

Ceramic Sensor

accuracy according to EN IEC 62828-2:  
standard: 0.35% span  
option: 0.25% span



### Nominal pressure

from 0 ... 40 mbar up to 0 ... 20 bar

### Output signal

2-wire: 4 ... 20 mA

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

others on request

### Product characteristics

- ▶ pressure port PVDF or PP-HT version for aggressive media
- ▶ pressure port G 1 1/2" for pasty and polluted media



### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe for gases and dusts
- ▶ diaphragm 99.9 % Al<sub>2</sub>O<sub>3</sub>
- ▶ customer specific versions



The screw-in transmitter LMK 351 has been designed for measuring small system pressure and level measurement in container. The LMK 351 is based on an own-developed capacitive ceramic sensor element. Usage in viscous and pasty media is possible because of the flush mounted sensor.

For the usage in aggressive media a pressure port in PVDF or PP-HT and the diaphragm in Al<sub>2</sub>O<sub>3</sub> 99.9 % is available. An intrinsically safe version complete the range of possibilities.

### Preferred areas of use are

-  Plant and Machine Engineering
-  Environmental Engineering  
(water – sewage – recycling)

### Preferred used for

-  Fuel and Oil
-  Viscous and Pasty Media



Pressure ranges																
Nominal pressure	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH <sub>2</sub> O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Low pressure	[bar]	-0.2		-0.3		-0.5							-1			

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V <sub>S</sub> = 9 ... 32 V <sub>DC</sub>
Option Ex-version	2-wire: 4 ... 20 mA / V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>
Option 3-wire	3-wire: 0 ... 10 V / V <sub>S</sub> = 12.5 ... 32 V <sub>DC</sub>

Performance	
Accuracy <sup>1</sup>	standard: ≤ ± 0.35 % span option: ≤ ± 0.25 % span
Permissible load	current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 0.02 A] Ω voltage 3-wire: R <sub>min</sub> = 10 kΩ
Influence effects	supply: 0.05 % span / 10 V load: 0.05 % span / kΩ
Long term stability	≤ ± 0.1 % span / year
Turn-on time	700 msec
Mean measuring time	5/sec
Response time	mean response time: ≤ 200 msec      max. response time: 380 msec

<sup>1</sup> accuracy according to EN IEC 62828-2-limit point adjustment (non-linearity, hysteresis, repeatability)

Thermal effects (Offset and Span) / -Permissible temperatures			
Tolerance band	≤ ± 0.1 % span / 10 K	in compensated range - 20 ... 80 °C	
Permissible temperatures <sup>2</sup>	medium: -40 ... 125 °C	electronics / environment: -40 ... 85 °C	storage: -40 ... 100 °C

<sup>2</sup> 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 (20 ... 2000 Hz)      according to DIN EN 60068-2-6
Shock	100 g / 1 msec      according to DIN EN 60068-2-27

Materials (media wetted)			
Pressure port	standard: stainless steel 1.4404 (316L)	option: PVDF	option: PP-HT
Housing	standard: stainless steel 1.4404 (316L)	option: PVDF	option: PP-HT
Option field housing	Stainless steel 1.4301 (304)		
Seals	FKM -40 ... 125 °C		
	FFKM -15 ... 125 °C		
	EPDM -40 ... 125 °C		
Diaphragm	standard: ceramics Al <sub>2</sub> O <sub>3</sub> 96 %	options: ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %	
Media wetted parts	pressure port, seals, diaphragm		

IS-protection (only for 4 ... 20 mA / 2-wire)			
Approval DX4-LMK 351	IBExU05ATEX1069 X stainless steel-pressure port with male (connector): zone 0: II 1 G Ex ia IIC T4 Ga      zone 20: II 1 D Ex iaD T 110 °C Da stainless steel-pressure port with cable: zone 0: II 1 G Ex ia IIB T4 Ga      zone 20: II 1 D Ex iaD T 110 °C Da plastic-pressure port with male (connector): zone 0/1 <sup>3</sup> : II 1/2 G Ex ia IIC T4 Ga/Gb      zone 20/21 <sup>3</sup> : II 1 D Ex iaD T 110 °C Da/Db plastic-pressure port with cable: zone 0/1 <sup>3</sup> : II 1/2 G Ex ia IIB T4 Ga/Gb      zone 20/21 <sup>3</sup> : II 1 D Ex iaD T 110 °C Da/Db		
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> = 14 nF, L <sub>i</sub> = negligible		
Max. permissible temperature for environment	in zone 0: -20 ... 60 °C for p <sub>atm</sub> 0.8 bar up to 1.1 bar zone 1 and higher: -25 ... 70 °C		
Connecting cables (by factory)	capacity: signal line / shield also signal line / signal line: 220 pF/m inductance: signal line / shield also signal line / signal line: 1.5 μH/m		

<sup>3</sup> The designation depends on the used pressure range. With nominal pressure ranges ≤ 60 mbar the designation is „2G“. With nominal pressure ranges > 60 mbar and < 10 bar (see item 17 of the type-examination certificate) must be attended!

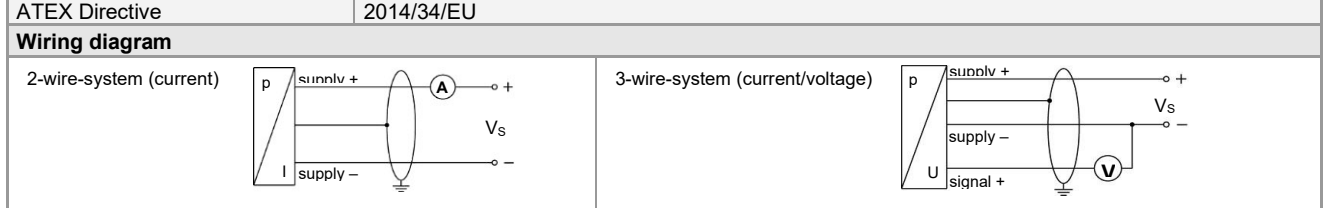
Miscellaneous			
Current consumption	signal output current: max. 21 mA	signal output voltage: max. 5 mA	
Weight	approx. 200 g		
Installation position	any		
Operational life	> 100 x 10 <sup>6</sup> loading cycles		
CE-conformity	EMV-directive: 2014/30/EU		

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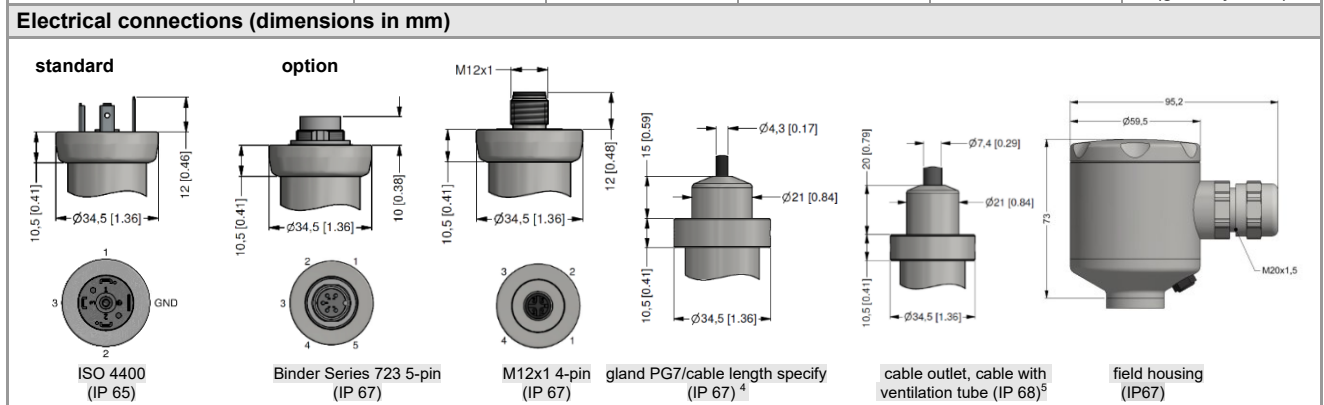
Technical Data

Option oxygen application	for $P_N \leq 15$ bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C for $P_N \leq 25$ bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C
ATEX Directive	2014/34/EU

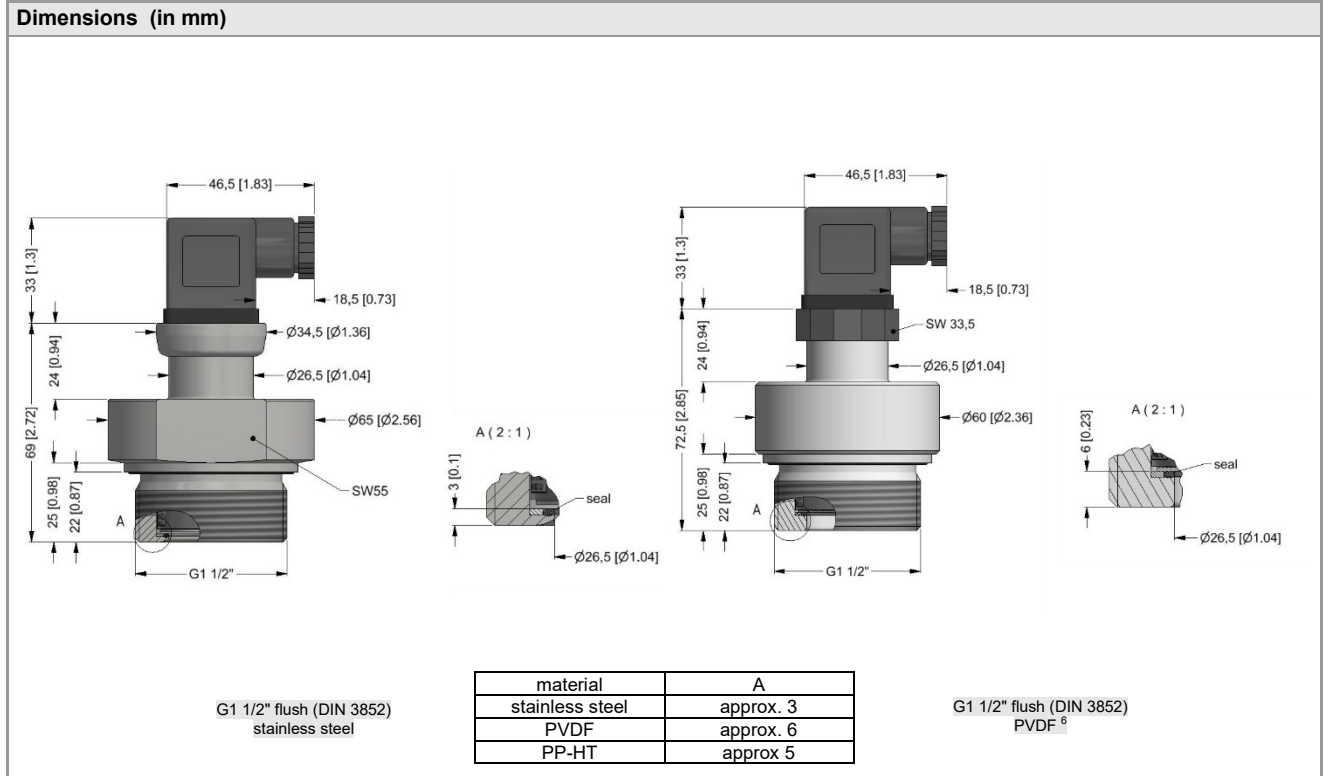


**Pin configuration**

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	field housing	cable colours (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		gn/ye (green/yellow)



<sup>4</sup> standard: 2m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)  
<sup>5</sup> different cable types and lengths available, permissible temperature depends on kind of cable



<sup>6</sup> not possible in combination with field housing

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

Ordering code LMK 351

05.06.2024

LMK 351

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Pressure																				
in bar			4	7	0															
in m H <sub>2</sub> O			4	7	1															
Input																				
	[mH <sub>2</sub> O]	[bar]																		
	0 ... 0.4	0 ... 0,04		0	4	0	0													
	0 ... 0.6	0 ... 0,06		0	6	0	0													
	0 ... 1	0 ... 0,1		1	0	0	0													
	0 ... 1.6	0 ... 0,16		1	6	0	0													
	0 ... 2.5	0 ... 0,25		2	5	0	0													
	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 ... 200	0 ... 20		2	0	0	2													
Customer																				
Customer - special range underpressure				X	X	X	X													
Output signal																				
4 ... 20 mA / 2-wire																		1		
0 ... 10 V / 3-wire <sup>3</sup>																		3		
Intrinsic safety Ex ia 4 ... 20 mA / 2-wire																		E		
Customer																		9		
Accuracy																				
0,5 % (plastic housing material)																		5		
0,35 % (standard)																		3		
0,25 %																		2		
0,5 % including Calibration Certificate																		T		
0,35 % including Calibration Certificate																		S		
Table of measured values for accuracy 0,35 %																		M		
Customer																		9		
Electrical connection																				
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 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) <sup>1</sup>																		T	R	0
+ PVC cable / 1 m																				
Customer																		9	9	9
Mechanical connection																				
G 1 1/2" (DIN 3852) - flush																		M	0	0
Customer																		9	9	9
Seals																				
Viton (FKM)																			1	
EPDM																			3	
FFKM																			7	
Customer																			9	
Housing																				
Stainless steel 1.4404 (316 L)																			1	
PVDF <sup>2</sup>																			B	
PP-HT																			R	
Customer																			9	
Diaphragm																				
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%) - not possible used for underpressure																				3
Ceramic Al <sub>2</sub> O <sub>3</sub> 99,9 %																				C
Customer																				9
Special version																				
Standard																				0 0 0



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



Version for oxygen

Customer

0 0 7  
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 full-plastic only with electrical connection code 100, E00 and M00; permissible medium temperature: -30 ... 60 °C

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



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