BD SENSORS®
pressure measurement

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-version for aggressive media
- pressure port G 1 ½" for pasty and polluted media

Optional versions

- IS-version
  Ex ia = intrinsically safe for gases and dusts
- diaphragm 99.9 % Al_2O_3
- 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 and the diaphragm in Al_2O_3 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

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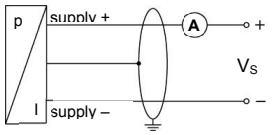
Pressure ranges																
Nominal pressure [bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level [mH_2O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure [bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Low pressure [bar]	-0.2		-0.3		-0.5				-1						

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}
Option Ex-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 ... 10 V / V_S = 12.5 ... 32 V_{DC}
Performance	
Accuracy[1]	standard: ≤ ± 0.35 % span option: ≤ ± 0.25 % span
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 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
[1] accuracy according to EN IEC 62828-2- limit point adjustment (non-linearity, hysterisis, repeatability)	
Thermal effects (Offset and Span) / -Permissible temperatures	
Tolerance band	≤ ±0.1 % span / 10 K in compensated range - 20 ... 80 °C
Permissible temperatures [2]	medium: -40 ... 125 °C electronics / environment:-40 ... 85 °C storage: -40 ... 100 °C
[2] 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), PVC option: PVDF
Housing	standard: stainless steel 1.4404 (316L) option: PVDF
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_2O_3 96 % options: ceramics Al_2O_3 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 [3]: II 1/2 G Ex ia IIC T4 Ga/Gb zone 20/21 [3]: II 1 D Ex iaD T 110 °C Da/Db plastic-pressure port with cable: zone 0/1 [3]: II 1/2 G Ex ia IIB T4 Ga/Gb zone 20/21 [3]: II 1 D Ex iaD T 110 °C Da/Db
Safety technical maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, C_i = 14 nF , L_i = negligible
Max. permissible temperature for environment	in zone 0: -20 ... 60 °C for p_{atm} 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
[3] 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 10^6 loading cycles
CE-conformity	EMV-directive: 2014/30/EU

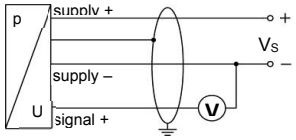
Option oxygen application	for P_N ≤ 15 bar: O-ring in 70 EPDM 281 (with BAM-approval); permissible maximum values are 15 bar / 60° C and 10 bar / 90° C for P_N ≤ 25 bar: O-ring in FKM Vi 567 (with BAM-approval); permissible maximum values are 25 bar / 150° C
ATEX Directive	2014/34/EU

Wiring diagram

2-wire-system (current)



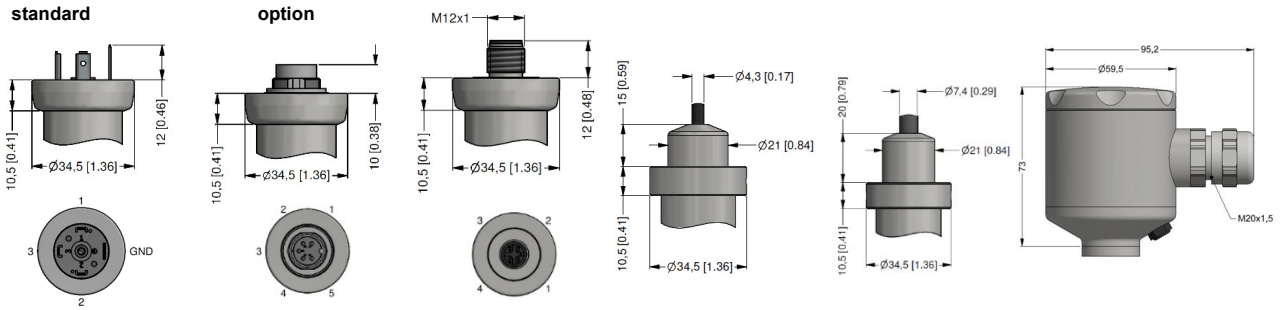
3-wire-system (current/voltage)



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)

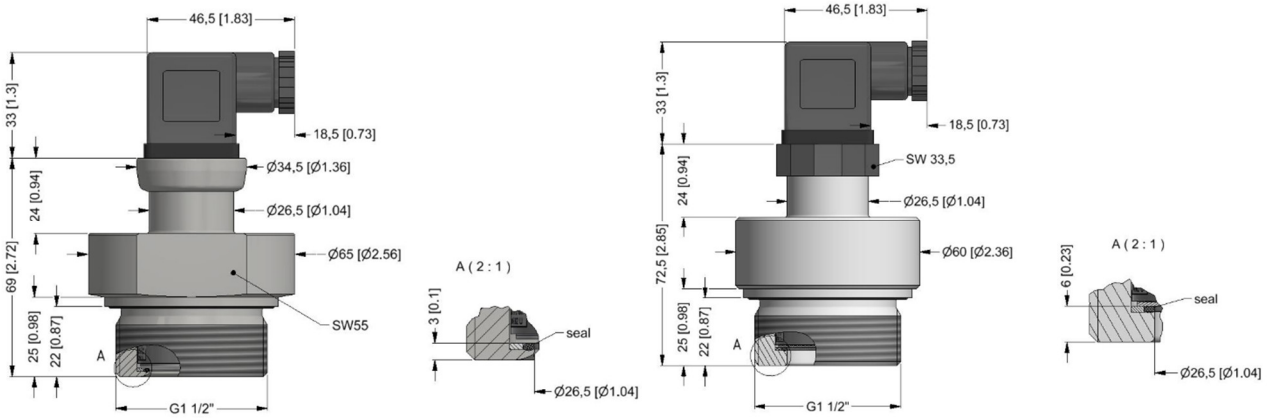
Electrical connections (dimensions in mm)



ISO 4400 (IP 65) | Binder Series 723 5-pin (IP 67) | M12x1 4-pin (IP 67) | gland PG7/cable length specify (IP 67) [4] | cable outlet, cable with ventilation tube (IP 68)[5] | field housing (IP67)

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

Dimensions (in mm)



G1 1/2" flush (DIN 3852) stainless steel

material	A
stainless steel	approx. 3
PVDF	approx. 6

G1 1/2" flush (DIN 3852) PVDF [6]

[6] not possible in combination with field housing

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Ordering code LMK 351

27.4.2021

LMK 351 ☐☐☐ - ☐☐☐☐ - ☐ - ☐ - ☐☐☐ - ☐☐☐ - ☐ - ☐ - ☐ - ☐☐☐

Pressure			
in bar			4 7 0
in m H_2O			4 7 1
Input	**[mH_2O]**	**[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			9 9 9 9
Output signal			
4 … 20 mA / 2-wire			1
0 … 10 V / 3-wire [3]			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) + PVC cable / 1 m			4 0 0
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 (IP68)[1] + PVC cable / 1 m			T R 0
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					
PVC		A					
PVDF [2]		B					
Customer		9					
Diaphragm							
Ceramic Al_2O_3 96 %			2				
Ceramic Al_2O_3 96 % with PTFE foil (accuracy ≥ 1%)			3				
Ceramic Al_2O_3 99,9 %			C				
Customer			9				
Special version							
Standard				0	0	0	
Version for oxygen				0	0	7	
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 not possible in combination witn compact field housing; permissible medium temperature: -30 … 60 °C
3 maximum length of PVC cable – 25 m, PUR, FEP, TPE – 40 m