



LMK 331

Screw-in Transmitter

- ▶ thickfilm ceramic sensor
- ▶ flush diaphragm
- ▶ pressure port of stainless steel, PVC, or PVDF
- ▶ accuracy:
 - 0.25 % FSO BFSL
 - (0.5 % FSO IEC 60770)
- ▶ nominal pressure ranges
 - from 0 ... 160 mbar
 - up to 0 ... 60 bar

The screw-in transmitter LMK 331 has been specially designed for level and process measurement.

The ceramic sensors feature high compatibility against aggressive media. Pressure port material is alternatively stainless steel 1.4571 (316Ti), or, for particularly aggressive media, PVDF or PVC.

Due to the semi-flush mounted pressure sensors the LMK 331 can also be used in viscous or contaminated media.

The sensor is sealed against the pressure port with FKM seals. Other elastomers are available on request.

For process measurement applications different process connections are available on request.

Our application engineers would like to assist you in choosing the right combination.

Preferred areas of use are:

- ▶ tank level measurement
- ▶ water and sewage treatment
- ▶ paper industry
- ▶ chemical industry

- ▶ ceramic sensor without oil-filling with high resistance against aggressive media, e.g. acids and lyes
- ▶ small thermal effects
- ▶ good long term stability
- ▶ option Ex:
 - II 1 G EEx ia IIC T4 (stainless steel pressure port)
 - II 2 G EEx ia IIC T4 (plastic pressure port);
 - only for 4 ... 20 mA / 2-wire (TÜV 03 ATEX 2006 X)
- ▶ customer specific versions:
 - special pressure ranges

Characteristics

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Technical Data

Input pressure range ¹															
Pressure port		G1 1/2"						G3/4"							
Nominal pressure gauge	[bar]	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40 ²	60 ²
Level	[mWC]	1.6	2.5	4	6	10	16	25	40	60	100	160	250	400	600
Permissible overpressure	[bar]	0.6	0.6	1.5	1.5	3	7	7	12	12	25	50	50	120	120

Output signal / Supply					
Standard	2-wire:	4 ... 20 mA / $V_S = 12 \dots 36 V_{DC}$		Ex-protection:	$V_S = 14 \dots 28 V_{DC}$
Optional (only for G3/4")	3-wire:	0 ... 10 V / $V_S = 14 \dots 36 V_{DC}$			

Performance		
Accuracy ³	$\leq \pm 0.5 \% \text{ FSO}$	(BFSL: $\leq \pm 0.25 \% \text{ FSO}$)
Permissible load	current 2-wire voltage 3-wire	: $R_{max} = [(V_S - V_{Smin}) / 0.02] \Omega$: $R_{min} = 10 \text{ k}\Omega$
Influence effects	supply: load:	0.05 % FSO / 10 V 0.05 % FSO / k Ω

Thermal effect	
Thermal error for offset and span in compensated range	$\leq \pm 0.2 \% \text{ FSO} / 10 \text{ K}$ -25 ... 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
Option Ex-protection DX13-LMK 331	stainless steel pressure port : II 1 G EEx ia IIC T4 plastic pressure port : II 2 G EEx ia IIC T4 (only for 4 ... 20 mA / 2-wire) safety technical maximum values: $V_i = 28 \text{ V}$, $I_i = 93 \text{ mA}$, $P_i = 660 \text{ mW}$

Mechanical stability	
Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 ms

Permissible temperatures ⁴	
Medium	-25 ... 135 °C
Electronic / environment	-25 ... 85 °C
Storage	-40 ... 125 °C

¹ G1 1/2" from 0.16 bar up to 1 bar; G3/4" from 0.6 bar up to 60 bar

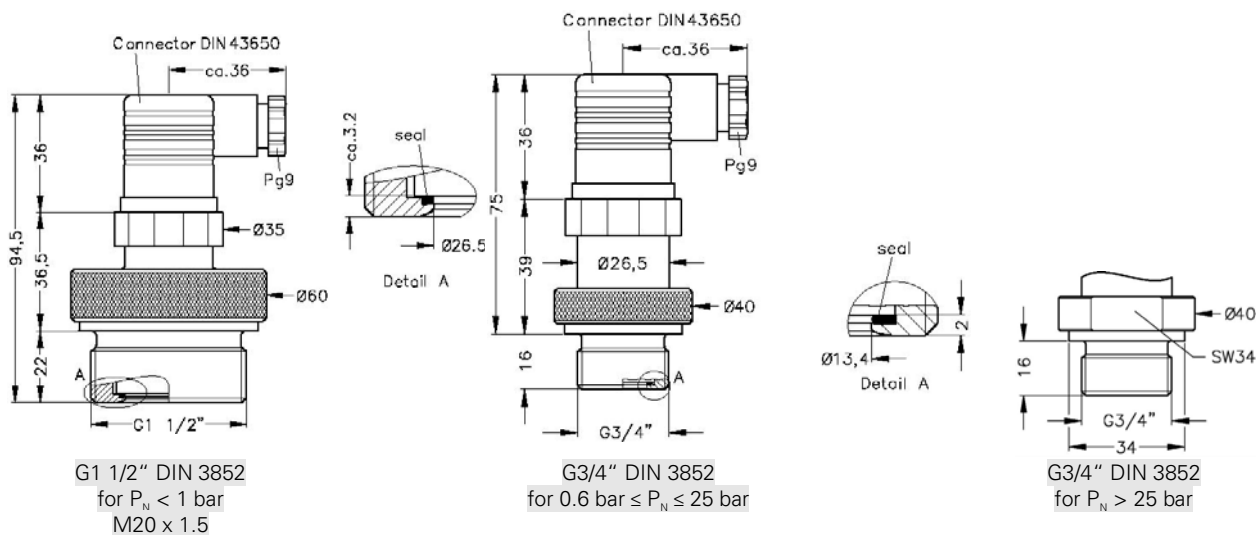
² only for pressure ports of stainless steel

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

⁴ for pressure port of PVC the maximum permissible temperature is 50 °C

Mechanical connection

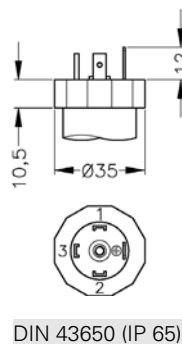
Standard



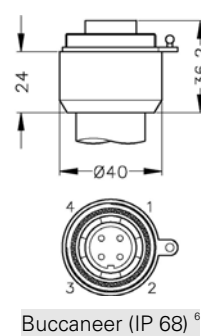
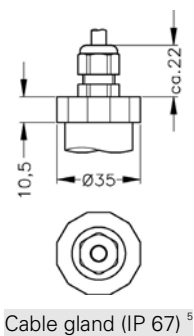
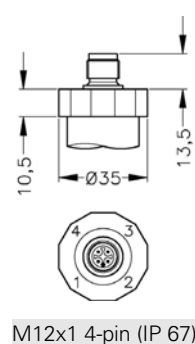
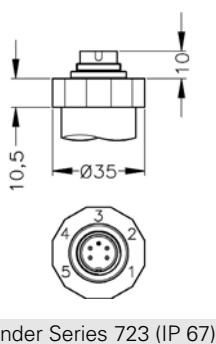
- ⇒ With PVC and PVDF versions total length increases by 3.5 mm (G1 1/2") or by 3 mm (G3/4")!
- ⇒ G3/4" with Ex-protection: total length increases by 17.5 mm!

Electrical connection

Standard



Optional



⁵ different cable types and lengths available; standard: 2 m PVC cable (without ventilation tube), optionally cable with ventilation tube

⁶ for gauge pressure cable with ventilation tube required

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Materials

Pressure port G1 1/2"	
Pressure port	standard: stainless steel 1.4571 (316Ti) option: PVC grey / PVDF
Housing	stainless steel 1.4305 (303)
Seals (media wetted)	FKM others on request
Diaphragm	ceramic Al ₂ O ₃ 96 %
Media wetted parts	pressure port, seals, diaphragm
Pressure port G3/4"	
Pressure port	standard: stainless steel 1.4571 (316Ti) optional: PVC grey / PVDF ⁷
Housing	standard: stainless steel 1.4301 (304) optional: PVC grey / PVDF
Seals (media wetted)	P _N ≤ 25 bar: FKM P _N > 25 bar: NBR others on request
Diaphragm	ceramic Al ₂ O ₃ 96 %
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

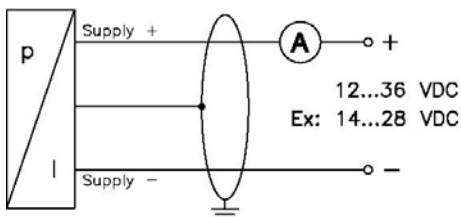
Current consumption	signal output current : max. 25 mA signal output voltage : max. 7 mA
Weight	approx. 150 g
Installation position	any

Pin configuration

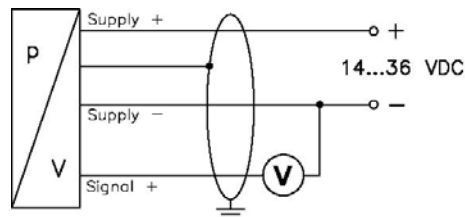
Electrical connection		DIN 43650	Binder 723 (5-pin)	M12x1 (4-pin)	Buccaneer (4-pin)	cable colours (DIN 47100)
2-wire-system	Supply +	1	3	1	1	white
	Supply -	2	4	2	2	brown
	Ground	ground pin	5	4	4	yellow / black
3-wire-system	Supply +	1	3	1	1	white
	Supply -	2	4	2	2	brown
	Signal +	3	1	3	3	green
	Ground	ground pin	5	4	4	yellow / black

Wiring diagrams

2-wire-system (current)



3-wire-system (voltage) (only for pressure port G3/4")



⁷ only for nominal pressure ranges P_N ≤ 25 bar

