

LMK 351

Screw-in Transmitter

Ceramic Sensor

accuracy according to IEC 60770:
standard: 0.35% FSO
option: 0.25% FSO



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 1/2" for pasty and polluted media



Optional versions

- ▶ IS-version
Ex ia = intrinsically safe for gases and dust
- ▶ diaphragm 99.9 % Al₂O₃
- ▶ 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.

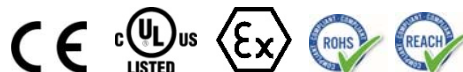
For the usage in aggressive media a pressure port in PVDF and the diaphragm in Al₂O₃ 99.9 % is available. An intrinsically safe version completes the range of possibilities.

Preferred areas of use are

-  Plant and machine engineering
-  Environmental engineering (water – sewage – recycling)

Preferred used for

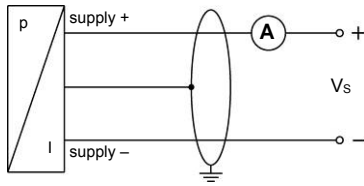
-  Fuel and oil
-  Viscous and pasty media



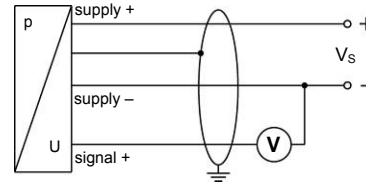
Pressure ranges																	
Nominal pressure	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20	
Level	[mH ₂ O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200	
Overpressure	[bar]	2	2	4	4	6	4	8	8	15	25	25	35	35	45	45	
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1							
Output signal / Supply																	
Standard		2-wire: 4 ... 20 mA / V _S = 9 ... 32 V _{DC}															
Option IS-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: $\leq \pm 0.35$ % FSO							option for P _N ≥ 0.6 bar: $\leq \pm 0.25$ % FSO								
Permissible load		current 2-wire: R _{max} = [(V _S - V _{Smin}) / 0.02 A] Ω							voltage 3-wire: R _{min} = 10 kΩ								
Influence effects		supply: 0.05 % FSO / 10 V							load: 0.05 % FSO / kΩ								
Long term stability		$\leq \pm 0.1$ % FSO / year at reference conditions															
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 IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)																	
Thermal effects (Offset and Span) / -Permissible temperatures																	
Tolerance band		$\leq \pm 0.1$ % FSO / 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 minimum permissible temperature is -30 °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								
Housing		standard: stainless steel 1.4404 (316L)							option: PVDF								
Option compact field housing		stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 ... 8 mm)															
Seals		FKM -40 ... 125 °C		FFKM -15 ... 125 °C		EPDM -40 ... 125 °C											
Diaphragm		standard: ceramics Al ₂ O ₃ 96 % options: ceramics Al ₂ O ₃ 99.9 %															
Media wetted parts		pressure port, seals, diaphragm															
Explosion protection (only for 4 ... 20 mA / 2-wire)																	
Approval DX14-LMK 351		IBExU05ATEX1070 X stainless steel-pressure port with connector: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da plastic-pressure port with connector: zone 0/1 ³ : II 1/2G Ex ia IIC T4 Ga/Gb zone 20/21 ⁴ : II 1/2D Ex ia IIIC T85 °C Da/Db															
Safety technical maximum values		U _i = 28 V, I _i = 93 mA, P _i = 660 mW, C _i = 27 nF, L _i = 5 μH, C _{gnd} = 27 nF															
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: 160 pF/m inductance: signal line / shield also signal line / signal line: 1 μH/m															
³ The designation depends on the used pressure range. With nominal pressure ranges ≤ 60 mbar the designation is „2G“.																	
⁴ 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 million load cycles															
CE-conformity		EMV-directive: 2014/30/EU															
ATEX Directive		2014/34/EU															

Wiring diagram

2-wire-system (current)



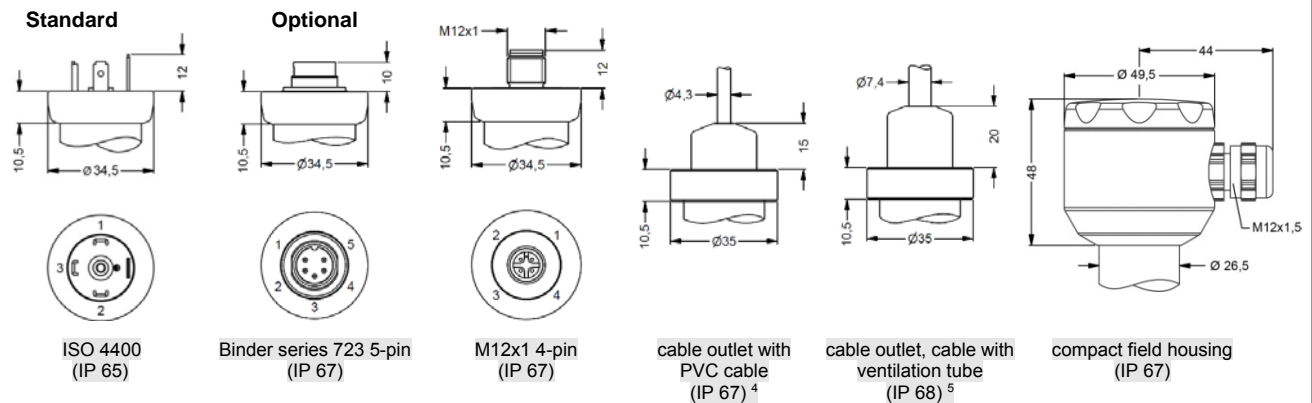
3-wire-system (voltage)



Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 (4-pin)	compact 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 \oplus	5	4	\oplus	GNYE (green-yellow)

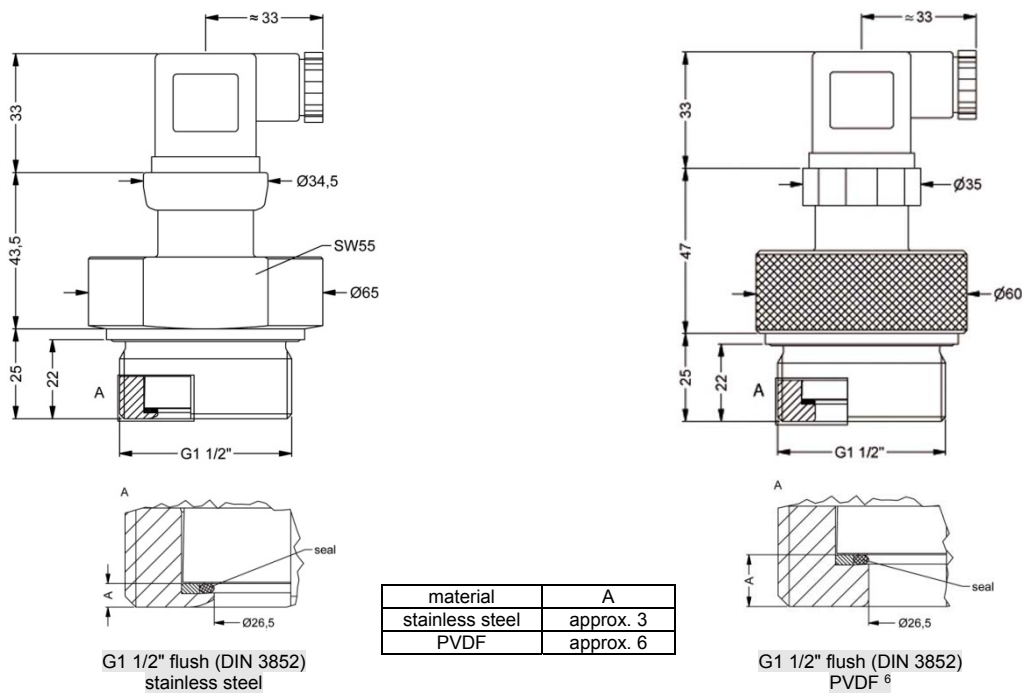
Electrical connections (dimensions in mm)



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)



⁶ not possible in combination with compact field housing

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Ordering code LMK 351

LMK 351



Pressure																				
	in bar	4	7	0																
	in mH ₂ O	4	7	1																
Input		[mH ₂ O]	[bar]																	
	0.4	0.04		0	4	0	0													
	0.6	0.06		0	6	0	0													
	1.0	0.10		1	0	0	0													
	1.6	0.16		1	6	0	0													
	2.5	0.25		2	5	0	0													
	4.0	0.40		4	0	0	0													
	6.0	0.60		6	0	0	0													
	10	1.0		1	0	0	1													
	16	1.6		1	6	0	1													
	25	2.5		2	5	0	1													
	40	4.0		4	0	0	1													
	60	6.0		6	0	0	1													
	100	10		1	0	0	2													
	160	16		1	6	0	2													
	200	20		2	0	0	2													
	customer			9	9	9	9													consult
Output																				
	4 ... 20 mA / 2-wire							1												
	0 ... 10 V / 3-wire							3												
	intrinsic safety 4 ... 20 mA / 2-wire							E												
	customer							9												consult
Accuracy																				
	standard:	0.35 % FSO						3												
	option for PN ≥ 0.6 bar:	0.25 % FSO						2												
	customer							9												consult
Electrical connection																				
	male and female plug ISO 4400							1	0	0										
	male plug Binder series 723 (5-pin)							2	0	0										
	cable outlet with PVC cable (IP67) ¹							T	A	0										
	cable outlet,																			
	cable with ventilation tube (IP68) ²							T	R	0										
	male plug M12x1 (4-pin) / metal							M	1	0										
	compact field housing																			
	stainless steel 1.4301 (304)							8	5	0										
	customer							9	9	9										consult
Mechanical connection																				
	G1 1/2" DIN 3852 with																			
	flush sensor							M	0	0										
	customer							9	9	9										consult
Seals																				
	FKM																			
	EPDM																			
	FFKM																			
	customer																			consult
Pressure port																				
	stainless steel 1.4404 (316L)																			
	PVDF ³																			
	customer																			consult
Diaphragm																				
	ceramics Al ₂ O ₃ 96%																			
	ceramics Al ₂ O ₃ 99.9%																			
	customer																			consult
Special version																				
	standard																			
	customer																			consult

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