

# LMK 351

## Screw-in Transmitter

### Ceramic Sensor

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



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#### **Nominal pressure**

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

#### **Output signal**

2-wire: 4 ... 20 mA  
3-wire: 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 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 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

<b>Pressure ranges</b>																
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							
<b>Output signal / Supply</b>																
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>														
<b>Performance</b>																
Accuracy		standard: ≤ ± 0.35 % FSO option: ≤ ± 0.25 % FSO														
Permissible load		current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 0.02] Ω voltage 3-wire: R <sub>min</sub> = 10 kΩ														
Influence effects		supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ														
Long term stability		≤ ± 0.1 % FSO / 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 IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)																
<b>Thermal effects (Offset and Span) / -Permissible temperatures</b>																
Tolerance band		≤ ± 0.1 % FSO / 10 K      in compensated range - 20 ... 80 °C														
Permissible temperatures		medium: -40 ... 125 °C electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C														
<b>Electrical protection</b>																
Short-circuit protection		permanent														
Reverse polarity protection		no damage, but also no function														
Electromagnetic compatibility		emission and immunity according to EN 61326														
<b>Mechanical stability</b>																
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														
<b>Materials (media wetted)</b>																
Pressure port		standard: stainless steel 1.4404 (316L) options: PVDF														
Housing		stainless steel 1.4404 (316L)														
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														
<b>IS-protection (only for 4 ... 20 mA / 2-wire)</b>																
Approval DX14-LMK 351		stainless steel-pressure port with male (connector): zone 0: II 1 G EEx ia IIC T4      zone 20: II 1 D EEx IP6X T=85°C stainless steel-pressure port with cable: zone 0: II 1 G EEx ia IIB T4      zone 20: II 1 D EEx IP6X T=85°C plastic-pressure port with male (connector): zone 0/1 <sup>2</sup> : II 1/2 G EEx ia IIC T4      zone 20/21 <sup>3</sup> : II 1/2 D EEx IP6X T=85°C plastic-pressure port with cable: zone 0/1 <sup>2</sup> : II 1/2 G EEx ia IIB T4      zone 20/21 <sup>3</sup> : II 1/2 D EEx IP6X T=85°C														
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> = 27 nF, L <sub>i</sub> = 5 μH														
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: 160 pF/m inductance: signal line / shield also signal line / signal line: 1 μH/m														
<sup>2</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!																

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Technical Data

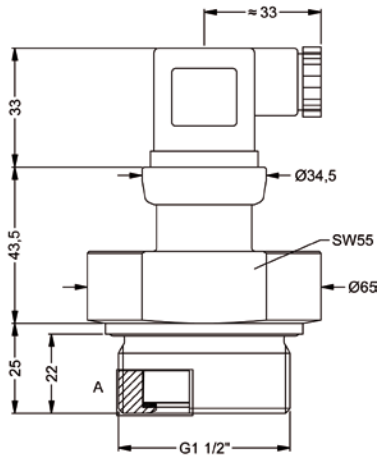
Miscellaneous							
Current consumption	signal output current: max. 21 mA		signal output voltage: max. 5 mA				
Weight	approx. 200 g						
Installation position	any						
Operational life	> 100 x 10 <sup>6</sup> loading cycles						
CE-conformity	EMV-directive: 2004/108/EC						
ATEX Directive	94/9/EC						
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 (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 pin	5	4	⊥	gn/ye (green/yellow)		
Electrical connections (dimensions in mm)							
ISO 4400 (IP 65)		Binder Serie 723 (IP 67)		M12x1 4-pin (IP 67)		cable outlet with PVC-cable (IP 67) <sup>3</sup>	
compact field housing (IP 67)				cable outlet, cable with ventilation tube (IP 68) <sup>4</sup>			
<sup>3</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)							
<sup>4</sup> different cable types and lengths available, permissible temperature depends on kind of cable							

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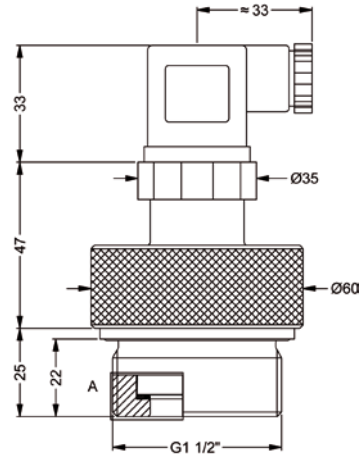
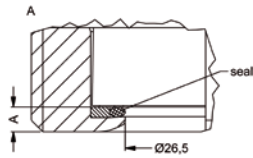
Screw-in Transmitter

Technical Data

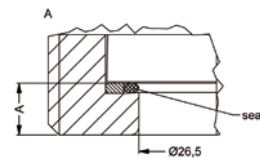
## Dimensions (in mm)



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



G1 1/2" flush (DIN 3852)  
PVDF<sup>5</sup>



material	A
stainless steel	ca. 3
PVDF	ca. 6

<sup>5</sup> not possible in combination with compact field housing

# Ordering code LMK 351

## LMK 351



<b>Pressure</b>																					
	in bar	4	7	0																	
	in mH <sub>2</sub> O	4	7	1																	
<b>Input</b>		[mH <sub>2</sub> 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														
	customer			9	9	9	9													consult	
<b>Output</b>																					
	4 ... 20 mA / 2-wire																				1
	0 ... 10 V / 3-wire																				3
	Intrinsic safety 4 ... 20 mA / 2-wire																				E
	customer																				9
																					consult
<b>Accuracy</b>																					
	standard	0.35 %																			3
	option	0.25 %																			2
	customer																				9
																					consult
<b>Electrical connection</b>																					
	Male and female plug ISO 4400																				1
	Male plug Binder series 723 (5-pin)																				2
	Cable outlet with PVC- cable <sup>1</sup>																				T
	Cable outlet <sup>2</sup>																				A
	Male plug M12x1 (4-pin) / metal																				R
	compact field housing																				0
	customer																				8
																					5
																					9
																					9
																					consult
<b>Mechanical connection</b>																					
	G1 1/2" DIN 3852 with flush sensor																				M
	customer																				0
																					9
																					9
																					consult
<b>Seals</b>																					
	FKM																				1
	EPDM																				3
	FFKM																				7
	customer																				9
																					consult
<b>Pressure port</b>																					
	Stainless steel 1.4404 (316L)																				1
	PVDF <sup>3</sup>																				B
	customer																				9
																					consult
<b>Diaphragm</b>																					
	Ceramics Al <sub>2</sub> O <sub>3</sub> 96%																				2
	Ceramics Al <sub>2</sub> O <sub>3</sub> 99.9%																				C
	customer																				9
																					consult
<b>Special version</b>																					
	standard																				0
	customer																				9
																					9
																					consult

<sup>1</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

<sup>2</sup> cable with ventilation tube (code TR0 = PVC cable), different cable types and lengths available, price without cable

<sup>3</sup> not possible in combination with compact field housing

## Website

[www.SensorsONE.co.uk](http://www.SensorsONE.co.uk)

## Email

enquiries [at] SensorsONE.co.uk

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