



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 Al_2O_3 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



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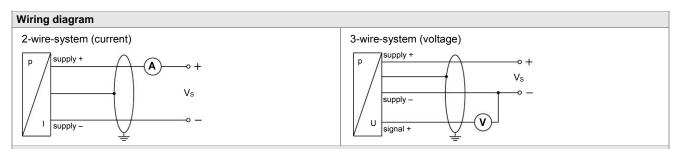


Screw-in Transmitter Technical Data

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	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0	.2	-0	.3		-0	.5					-1			

Output signal / Supply Survice: 4 20 mA / V _s = 9 32 V _{SC} Option IS-version 2-wire: 4 20 mA / V _s = 14 28 V _{SC} Option IS-version 3-wire: 0 10 V / V _s = 12.5 32 V _{SC} Performance Accuracy! standard: <+0.35 % FSO option for P _N ≥ 0.6 bar: <+0.25 % FSO Accuracy! standard: <+0.35 % FSO option for P _N ≥ 0.6 bar: <+0.25 % FSO Long ferm stability 5.4.0.1 % FSO? Vyear at reference conditions Turn-on time 700 msec Mean measuring time 5/sec Response time: <200 msec max. response time: 380 msec **coursey according to IEC 00770: Imaginary point adjustment (ron-Inhuratr), hystemasis, repeatability? **Thermal effects (Offset and Span) /- Permissible temperatures **Tolerance band \$ ±0.1 % FSO / 10 K in compensated range - 20 80 °C **Permissible temperatures s² **Tolerance band \$ ±0.1 % FSO / 10 K **Permissible temperatures s² **Tolerance band \$ ±0.1 % FSO / 10 K **Electroal protection **Description for the competibility **Bort-Circuit protection permissible temperature s² **Reverse polarity protection permiss			·					
Option S-version 2-wire 4 20 mA / V ₈ = 14 28 V _{5C}	Output signal / Supply							
Option S-version 2-wire 4 20 mA / V ₈ = 14 28 V _{5C}		2-wire: 4 20 mA / V _S = 9 32 V _{DC}						
Porformance Accuracy 1 standard: ≤ ± 0.35 % FSO option for P _N ≥ 0.6 bar: ≤ ± 0.25 % FSO Accuracy 1 standard: ≤ ± 0.35 % FSO option for P _N ≥ 0.6 bar: ≤ ± 0.25 % FSO Permissible load current 2-wire: R _{max} = [(V _S − V _{S,max}) / 0.02 Å] Ω voltage 3-wire: R _{max} = 10 kΩ Influence effects supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ Long term stability ≤ ± 0.1 % FSO / year at reference conditions Turn-on time 700 msec Reaponse time: max. response time: 380 msec Response time images are proposed time of the propose time of the proposed time of time of the proposed time of the proposed time of time of the proposed time of time of the proposed time of time	Option IS-version							
Accuracy Standard: ≤ ± 0.35 % FSO Option for P _n ≥ 0.6 barr. ≤ ± 0.25 % FSO	Option 3-wire	3-wire: 0 10 V / V _S = 12.5 32 V _{DC}						
Permissible load current 2-wire. R _{ev.} = {(V _a − V _{seni}) / 0.02 Å) Ω voltage 3-wire. R _{min} = 10 kΩ Influence effects supply. 0.05 % FSO / 10 √ voltage 3-wire. R _{min} = 10 kΩ Long term stability ≤ ± 0.1 % FSO / year at reference conditions Turn-on time T00 msec mean response time 5/sec mean response mean response time 5/sec mean response mean response mean response mean respon	Performance	,						
Permissible load current 2-wire. R _{ev.} = {(V _a − V _{seni}) / 0.02 Å) Ω voltage 3-wire. R _{min} = 10 kΩ Influence effects supply. 0.05 % FSO / 10 √ voltage 3-wire. R _{min} = 10 kΩ Long term stability ≤ ± 0.1 % FSO / year at reference conditions Turn-on time T00 msec mean response time 5/sec mean response mean response time 5/sec mean response mean response mean response mean respon	Accuracy 1	standard: < + 0.35 % FSO	option for P _N ≥ 0.6 bar: < + 0.25 % FSO					
Influence effects			·					
Long term stability	Influence effects							
Turn-on tine Mean measuring time 5/sec mean response time 5/sec	Long term stability							
Response time mean response time: ≤ 200 msec max. response time: 380 msec "accuracy according to IEC 60770 - limb point adjustment (non-limeanly, hystresis, repeatability)	Turn-on time							
**acuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability) Thermal effects (Offset and Span) / - Permissible temperatures Tolerance band	Mean measuring time	5/sec						
**Tacuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability) Thermal effects (Offset and Span) / -Permissible temperatures Tolerance band \$±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 Permissible temperatures ² medium: -40 125 °C electronics / environment: -40 85 °C storage: -40 100 °C Permissible temperature is -30 °C Electrical protection permanent Reverse polarity protection no damage, but also no function Electromagnetic compatibility mission and immunity according to EN 61326 Mechanical stability Wibration 10 g RMS (20 2000 Hz) according to DIN EN 60068-2-6 Shock 10 0 g / 1 msc according to DIN EN 60068-2-6 Shock 10 0 g / 1 msc according to DIN EN 60068-2-7 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 standard: stainless steel 1.4404 (316L) option: PVDF Option compact field housing standard: stainless steel 1.4404 (316L) option: PVDF Diaphragm Standard: cramics A ₁ C ₃ 96 % options: ceramics A ₁ C ₃ 96 % options: ceramics A ₂ C ₃ 98 % options: ceramics A ₂ C ₃ 98 % options: ceramics A ₂ C ₃ 99 % Media wetted parts pressure port with connector:	Response time	mean response time: ≤ 200 msec	max. response time: 380 msec					
Thermal effects (Offset and Span) / Permissible temperatures Toterance band	1 accuracy according to IEC 60770 - limi							
Tolerance band								
Permissible temperatures 2 medium: 40 125 °C electronics / environment: 40 85 °C storage: 40 100 °C		<u>. </u>	ange - 20 80 °C					
* for pressure port of PVDF the minimum permissible temperature is -30 °C Electrical protection permanent Reverse polarity protection no damage, but also no function Electromagnetic compatibility emission and immunity according to EN 61326 Mechanical stability ***Dividence of the provided of t								
Short-circuit protection permanent no damage, but also no function no damage, but also no function emission and immunity according to EN 61326		n permissible temperature is -30 °C	<u> </u>					
Reverse polarity protection no damage, but also no function								
Reverse polarity protection no damage, but also no function	Short-circuit protection	permanent						
Electromagnetic compatibility Emission and immunity according to EN 61326	Reverse polarity protection	no damage, but also no function						
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 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 FFKM -15 125 °C FFKM -10 125 °C FKM								
Vibration		, , , , ,						
Shock 100 g / 1 msec according to DIN EN 60068-2-27 Materials (media wetted)	•	10 a RMS (20 2000 Hz)	according to DIN EN 60068-2-6					
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								
Pressure port		, 100 g, 1 moss	4000.ug to 2 2 00000 2 2					
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Option compact field housing stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 8 mm) Seals FKM	· · · · · · · · · · · · · · · · · · ·	` '	•					
Seals FKM -40 125 °C FFKM -15 125 °C FFKM -40 125 °C FFKM -40 125 °C Diaphragm standard: ceramics Al₂O₃ 96 % options: ceramics Al₂O₃ 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:	<u> </u>							
FFKM	· · ·		5, brass, flicker plated (damping range 2 6 flim)					
Diaphragm standard: options: ceramics Al₂O₃ 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 10 Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da plastic-pressure port with connector: zone 01¹ 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 U₁ = 28 V₁ I₁ = 93 mA, P₁ = 660 mW, C₁ = 27 nF, L₁ = 5 μH, C₃nd = 27 nF Max. permissible temperature for environment in zone 0: 20 60 °C for patrn 0.8 bar up to 1.1 bar 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 3¹ The designation depends on the used pressure range. 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	Ocais	FFKM -15 125 °C						
Media wetted parts pressure port, seals, diaphragm	Diaphragm	standard: ceramics Al ₂ O ₃ 96 %						
Explosion protection (only for 4 20 mA / 2-wire) Approval DX14-LMK 351 BEXU05ATEX1070 X stainless steel-pressure port with connector:	Media wetted parts	- ·						
Approval DX14-LMK 351 IBEXU05ATEX1070 X Stainless steel-pressure port with connector:	•	! · · · · · · · · · · · · · · · · · · ·						
stainless steel-pressure port with connector:								
Max. permissible temperature for environment in zone 0:		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	D b					
Max. permissible temperature for environment in zone 0:	Safety technical maximum values							
(by factory) 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		in zone 0: -20 60 °C for p _{atm} 0.8 bar up to 1.1 bar						
4 With nominal pressure ranges > 60 mbar and < 10 bar (see item 17 of the type-examination certificate) must be attended!	_	capacity: signal line / shield also signal line / signal line: 160 pF/m						
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								
Weight approx. 200 g Installation position any Operational life 100 million load cycles CE-conformity EMV-directive: 2014/30/EU	Miscellaneous							
Installation position any Operational life 100 million load cycles CE-conformity EMV-directive: 2014/30/EU	Current consumption	signal output current: max. 21 mA	signal output voltage: max. 5 mA					
Operational life 100 million load cycles CE-conformity EMV-directive: 2014/30/EU	Weight	approx. 200 g						
CE-conformity EMV-directive: 2014/30/EU	Installation position	any						
CE-conformity EMV-directive: 2014/30/EU	·	100 million load cycles						
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Screw-in Transmitter



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 😩	5	4	(GNYE (green-yellow)		

Electrical connections (dimensions in mm) Standard Optional 2 Ø 26.5 cable outlet with cable outlet, cable with compact field housing ISO 4400 Binder series 723 5-pin M12x1 4-pin PVC cable (IP 67) 4 ventilation tube (IP 68) ⁵ (IP 65) (IP 67) (IP 67) (IP 67)

© 2019 BD|SENSORS GmbH — The specifications given in this document represent the state of engineering at the time of publishing. We reserve the right to make modifications to the specifications and materials. Dimensions (in mm) Ø34.5 SW55 Ø65 22 G1 1/2" material stainless steel approx. 3 approx. 6 G1 1/2" flush (DIN 3852) G1 1/2" flush (DIN 3852) PVDF stainless steel ⁶ not possible in combination with compact field housing

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



Ordering code LMK 351 LMK 351 Pressure in mH₂O Input [bar] 0 4 0 0 0 6 0 0 0.04 0.4 0.6 0.06 1 0 0 0 1.0 0.10 1 0 0 0 1 6 0 0 2 5 0 0 4 0 0 0 6 0 0 0 1 0 0 1 1.6 0.16 2.5 0.25 0.40 4.0 6.0 0.60 6 0 0 0 0 1 1 0 0 1 2 5 0 1 4 0 0 1 1 0 0 2 1 1 6 0 2 2 0 0 2 9 9 9 9 10 1.0 16 1.6 25 2.5 40 4.0 60 6.0 100 10 160 16 200 20 customer consult Output 4 ... 20 mA / 2-wire 0 ... 10 V / 3-wire 3 intrinsic safety 4 ... 20 mA / 2-wire Ε customer 9 consult 3 2 standard: 0.35 % FSO option for $p_N \ge 0.6$ bar: 0.25 % FSO 9 customer consult Electrical connection male and female plug ISO 4400 0 0 male plug Binder series 723 (5-pin) 0 0 cable outlet with PVC cable (IP67) A 0 cable outlet, cable outlet, cable with ventilation tube (IP68) ² male plug M12x1 (4-pin) / metal compact field housing Т R 0 M 1 0 8 5 0 stainless steel 1.4301 (304) 9 9 9 customer consult Mechanical connection G1 1/2" DIN 3852 with M 0 0 flush sensor customer 9 9 9 consult Seals FKM **EPDM** 3 FFKM 7 9 customer consult Pressure port stainless steel 1.4404 (316L) 1 PVDF В customer a consult Diaphragm ceramics Al₂O₃ 96 % 2 ceramics Al₂O₃ 99.9 % С customer 9 consult Special version 0 0 0 9 9 9 standard customer consult

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¹ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request

 $^{^{\}rm 2}$ code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

 $^{^{\}rm 3}$ not possible in combination witn compact field housing; min. permissible temperature -30 $^{\rm \circ}{\rm C}$