

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 ½" 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.

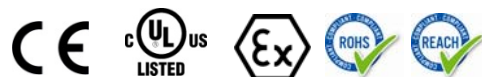
For the usage in aggressive media a pressure port in PVDF and the diaphragm in Al₂O₃ 99.9 % is available. An intrinsically safe version complete the range of possibilities.

Preferred areas of use are

-  Plant and Machine Engineering
-  Environmental Engineering
(water – sewage – recycling)

Preferred used for

-  Fuel and Oil
-  Viscous and Pasty Media



| 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 |
| 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 % FSO option for P _N ≥ 0.6 bar: ≤ ± 0.25 % FSO | | | | | | | | | | | | | | |
| Permissible load | | current 2-wire: R _{max} = [(V _S - V _{S min}) / 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 | | ≤ ± 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 | | ≤ ± 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 | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | |
| IS-protection (only for 4 ... 20 mA / 2-wire) | | | | | | | | | | | | | | | | |
| Approval DX14-LMK 351 | | IBExU05ATEX1070 X stainless steel-pressure port with male (connector): Zone 0: II 1G Ex ia IIC T4 Ga Zone 20: II 1D Ex ia IIIC T85 °C Da plastic-pressure port with male (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 x 10 ⁶ loading cycles | | | | | | | | | | | | | | |
| CE-conformity | | EMV-directive: 2014/30/EU | | | | | | | | | | | | | | |
| ATEX Directive | | 2014/34/EU | | | | | | | | | | | | | | |

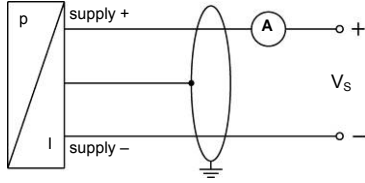
LMK 351

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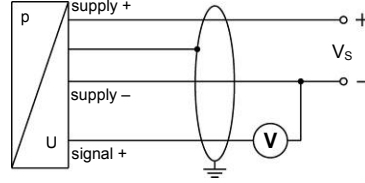
Technical Data

Wiring diagram

2-wire-system (current)



3-wire-system (current/voltage)



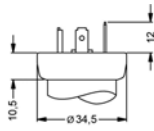
Pin configuration

| 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 | ⊥ | gnye (green-yellow) |

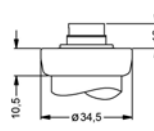
Electrical connections (dimensions in mm)

standard

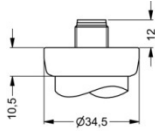
option



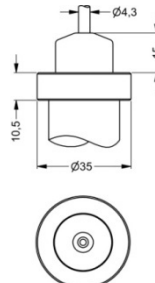
ISO 4400 (IP 65)



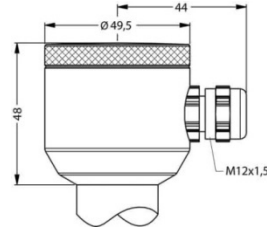
Binder Series 723 5-pin (IP 67)



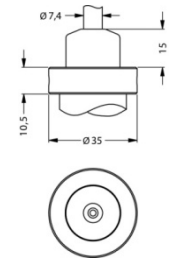
M12x1 4-pin (IP 67)



cable outlet with PVC cable (IP 67)⁴



compact field housing (IP 67)

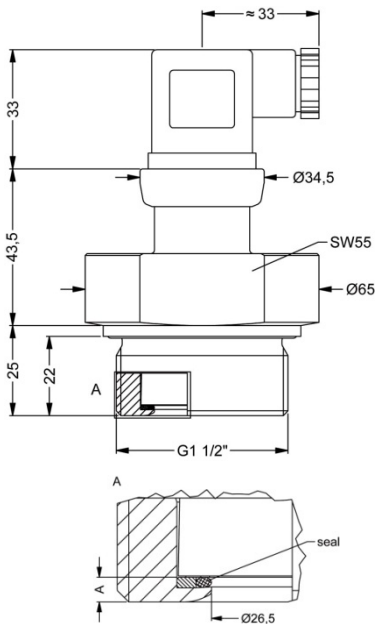


cable outlet, cable with ventilation tube (IP 68)⁵

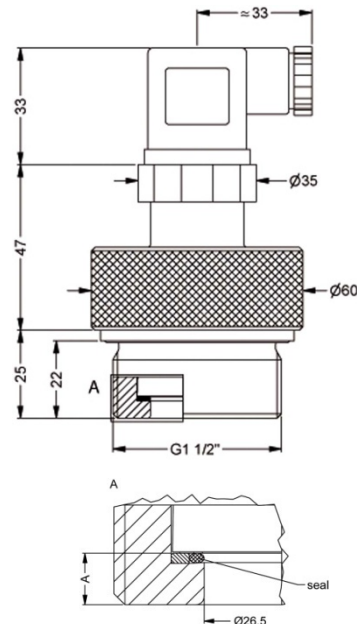
⁴ standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

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



G1 1/2" flush (DIN 3852) PVDF⁶

| material | A |
|-----------------|-------|
| stainless steel | ca. 3 |
| PVDF | ca. 6 |

⁶ not possible in combination with compact field housing

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