DMK 351

Pressure 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 … 10 V
others on request

Product characteristics

- high media resistance

Optional versions

- IS-version (temperature class T4)
  Ex ia = intrinsically safe for
  gases and dusts
- IS-version (temperature class T6)
- diaphragm 99.9 % Al_2O_3
- customer specific versions

The pressure transmitter DMK 351 has been specially designed for applications in plant and machine engineering as well as laboratory techniques and is suitable for measuring small system pressure and filling heights.

By using our own-developed capacitive sensor, optionally available as Al_2O_3 99.9%, the DMK 351 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for a use in explosive environments.

Preferred areas of use are

- Plant and machine engineering
- Laboratory techniques

Preferred used for

- Fuel and oil
- Water

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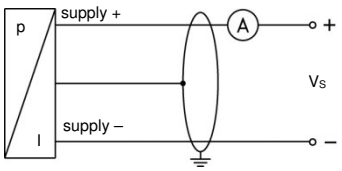
Pressure ranges																
Nominal pressure [1]	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Level	[mH_2O]	0.4	0.6	1	1.6	2.5	4	6	10	16	25	40	60	100	160	200
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1						
[1] available in gauge and absolute; nominal pressure ranges absolute from 1 bar																

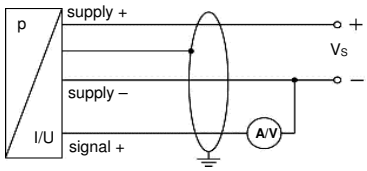
Output signal / Supply		
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}	
Option IS-version	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}	
Option 3-wire	3-wire: 0 ... 10 V / V_S = 12.5 ... 32 V_{DC}	
Performance		
Accuracy [2]	standard: ≤ ± 0.35 % FSO	option for p_N ≥ 0.6 bar: ≤ ± 0.25 % FSO
Permissible 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	≤ ± 0.1 % FSO / year at reference conditions	
Turn-on time	700 msec	
Mean measuring rate	5/sec	
Response time	mean response time: < 200 msec	max. response time: 380 msec
[2] accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)		
Thermal effects (offset and span)		
Tolerance band	≤ ± 1 % FSO	
in compensated range	-20 … 80 °C	
Permissible temperatures		
Permissible temperatures [3]	medium: -40 ... 125 °C	electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C
[3] for pressure port in PVDF or PP the medium temperature is -30 … 60 °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		
Pressure port	standard: stainless steel 1.4404 (316L)	option [4]: PP, PVDF
Housing	standard: stainless steel 1.4404 (316L)	option [4]: PP, PVDF
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)	
Seal	standard: FKM	option: EPDM
Diaphragm	standard: ceramics Al_2O_3 96 %	option: ceramics Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm	
[4] only with mech. connection G1/2" DIN 3852 open port, bore 12 mm, p_N ≤ 10 bar and without explosion protection possible		
Explosion protection (only for 4 … 20 mA / 2-wire with stainless steel version)		
Approval DX 14-DMK 351	IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da	option: II 1G Ex ia IIC T6 Ga
Safety technical maximum values	U_i = 28 V_{DC}, 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 in zone 1 and higher: -25 ... 70 °C for T6: -25 … 60 °C	
Connecting cables (by factory)	cable capacity: signal line / shield also signal line / signal line: 160 pF/m cable inductance: signal line / shield also signal line / signal line: 1 µH/m	
Miscellaneous		
Installation position	any	
Current consumption	signal output current: max. 21 mA	signal output voltage: max. 5 mA
Weight	min. 200 g	
Operational life	100 million load cycles	
CE-conformity	EMC-directive: 2014/30/EU	
ATEX Directive	2014/34/EU	

Wiring diagram

2-wire-system (current)



3-wire-system (current / voltage)

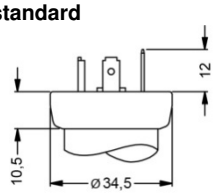


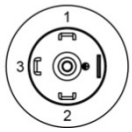
Pin configuration

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 ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

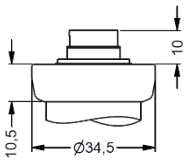
standard

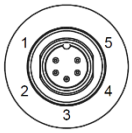




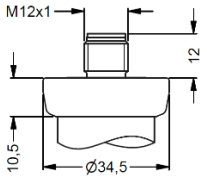
ISO 4400
(IP 65)

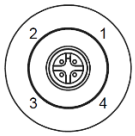
options



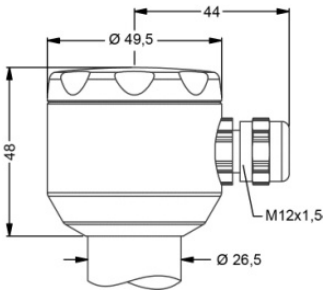


Binder series 723 5-pin
(IP 67)

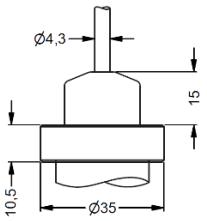




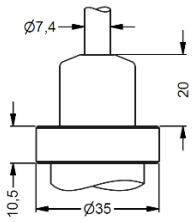
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with
PVC-cable (IP 67) [5]

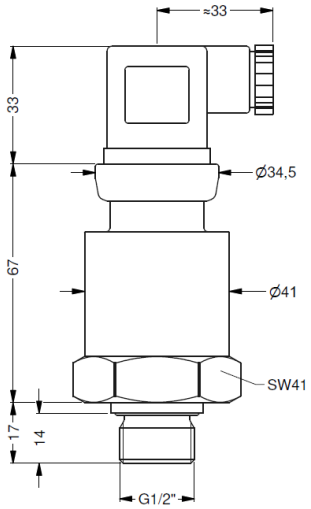


cable outlet, cable
with ventilation tube (IP 68) [6]

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

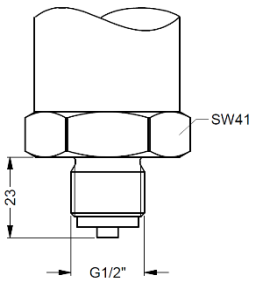
Mechanical connection (dimensions in mm)

standard

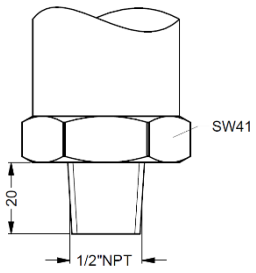


G1/2" DIN 3852

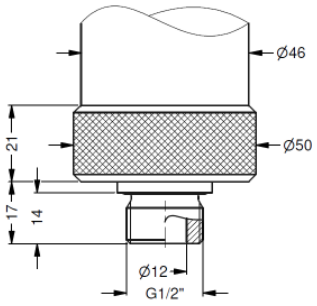
options



G1/2" EN 837



1/2" NPT



PP / PVDF
G1/2" DIN 3852 open port,
bore 12 mm, $p_N \leq 10$ bar

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BD|SENSORS pressure measurement

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Ordering code DMK 351

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Pressure			
in bar, gauge		2 9 0	
in bar, absolute [1]		2 9 1	
in mH_2O, gauge		2 9 2	
Input [mH_2O]	[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 T4; 4 … 20 mA / 2-wire		E	
intrinsic safety T6; 4 … 20 mA / 2-wire		E6	
customer		9	consult
Accuracy			
standard:	0.35 % FSO	3	
option for $p_N \geq 0.6$ 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	
male plug M12x1 (4-pin) / metal		M 1 0	
cable outlet with PVC cable (IP67) [2]		T A 0	
cable outlet, cable with ventilation tube (IP68) [3]		T R 0	
compact field housing stainless steel 1.4301 (304)		8 5 0	
customer		9 9 9	consult
Mechanical connection			
G1/2" DIN 3852		1 0 0	
G1/2" EN 837		2 0 0	
1/2" NPT		N 0 0	
G1/2" DIN 3852 open pressure port		H 0 0	
customer		9 9 9	consult
Seals			
FKM		1	
EPDM		3	
customer		9	consult
Pressure port			
stainless steel 1.4404 (316L)		1	
PP [4]		E	
PVDF [4]		B	
customer		9	consult
Diaphragm			
ceramics Al_2O_3 96 %		2	
ceramics Al_2O_3 99.9 %		C	
customer		9	consult
Special version			
standard		0 0 0	
customer		9 9 9	consult

[1] nominal pressure ranges absolute from 1 bar
[2] standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C); others on request
[3] code TR0 = PVC cable, cable with ventilation tube available in different types and lengths
[4] PP / PVDF possible only with G1/2" DIN 3852 open pressure port, $p_N \leq 10$ bar and without explosion protection; permissible medium temperature: -30 … 60 °C

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