DMK 351P

Pressure Transmitter for the Process Industry

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

Special characteristics

- hygienic version
- different process connections (G1 1/2", diary pipe, Clamp, etc.)
- high overpressure capability

Optional versions

- IS-version
  Ex ia = intrinsically safe
  for gases and dusts
- diaphragm 99.9 % Al_2O_3
- customer specific versions
  e.g. special pressure ranges

The pressure transmitter DMK 351P has been designed for measuring small system pressure in the food industry and chemical industry.

The DMK 351P is based on an own-developed capacitive ceramic sensor element. It features high overpressure resistance and high resistance against most of aggressive media. A variety of different process and electrical connections and an intrinsically safe version complete the range of possibilities.

Preferred areas of use are

- Food industry
- Chemical and petrochemical industry

Preferred used for

- Paint and varnish
- Viscous and pasty media

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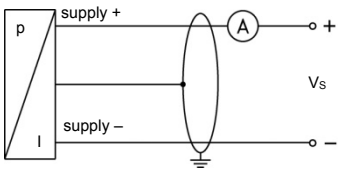
Pressure ranges																
Nominal pressure gauge	[bar]	0.04	0.06	0.1	0.16	0.25	0.4	0.6	1	1.6	2.5	4	6	10	16	20
Nominal pressure absolute	[bar]	on request					0.4	0.6	1	1.6	2.5	4	6	10	16	20
Overpressure	[bar]	2	2	4	4	6	6	8	8	15	25	25	35	35	45	45
Permissible vacuum	[bar]	-0.2		-0.3		-0.5				-1						

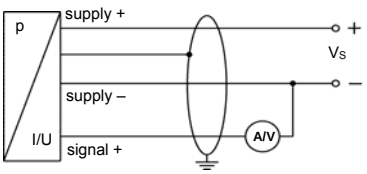
Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / V_S = 9 ... 32 V_{DC}
Option IS-protection	2-wire: 4 ... 20 mA / V_S = 14 ... 28 V_{DC}
Option 3-wire	3-wire: 0 … 10 V / V_S = 12.5 ... 32 V_{DC}
Performance	
Accuracy [1]	standard: ≤ ± 0.35 % FSO option for P_N ≥ 0.6 bar: ≤ ± 0.25 % FSO
Long term stability	≤ ± 0.1 % FSO / year at reference conditions
Influence effects	supply: 0.05 % FSO / 10 V load: 0.05 % FSO / kΩ
Permissible load	current 2-wire: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$ voltage 3-wire: R_{min} = 10 kΩ
Turn-on time	700 msec
Mean measuring rate	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 errors (offset and span) / -Permissible temperatures	
Thermal error	≤ ±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
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	stainless steel 1.4404 (316L)
Housing	stainless steel 1.4404 (316L)
Option compact field housing	stainless steel 1.4301 (304); cable gland M12x1.5, brass, nickel plated (clamping range 2 … 8 mm)
Seal (media wetted)	FKM EPDM others on request
Diaphragm	standard: ceramic Al_2O_3 96 % option: ceramic Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm
Explosion protection (only for 4 … 20 mA / 2-wire)	
Approval DX 14-DMK 351 P	IBExU 05 ATEX 1070 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da
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	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
Miscellaneous	
Current consumption	max. 21 mA
Weight	min. 200 g
Installation position	any
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)

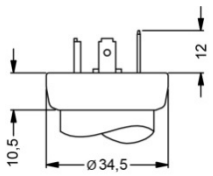


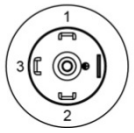
Pin configuration

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 3-wire)	3	1	3	OUT +	GN (green)
Shield	ground pin ⏚	5	4	⏚	GNYE (green-yellow)

Electrical connections (dimensions in mm)

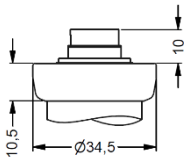
standard

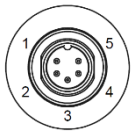




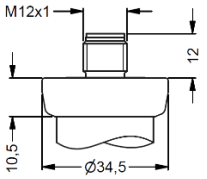
ISO 4400
(IP 65)

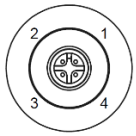
options



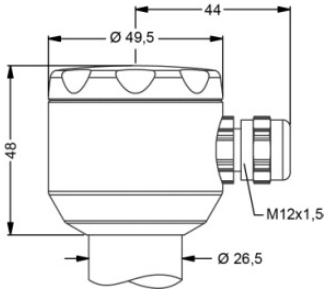


Binder series 723 5-pin
(IP 67)

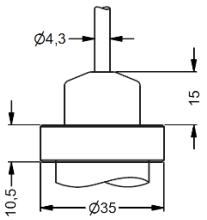




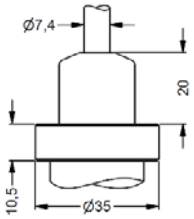
M12x1 4-pin
(IP 67)



compact field housing
(IP 67)



cable outlet with
PVC-cable (IP 67) [2]



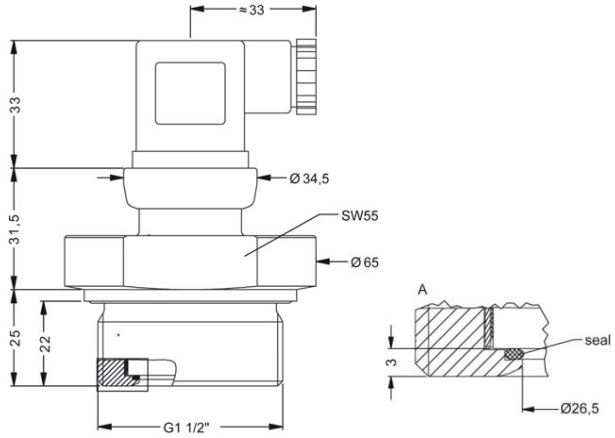
cable outlet, cable with
ventilation tube (IP 68) [3]

⇨ **universal stainless steel field housing 1.4404 with cable gland M20x1.5 (ordering code 880) and other versions on request**

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

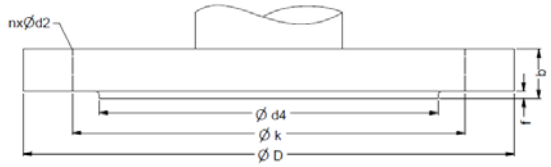
Mechanical connections (dimensions in mm)

standard



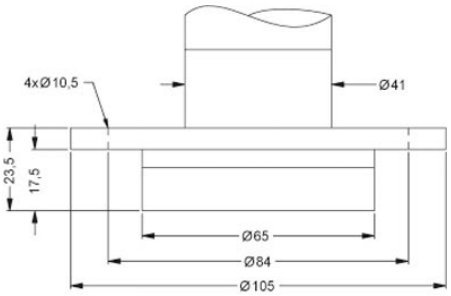
G1 1/2" DIN 3852

options

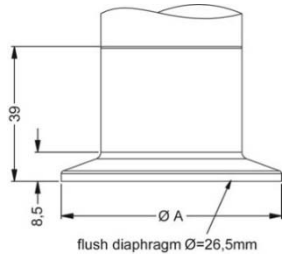


flange (DIN 2501)

dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
k	85	125	160
d4	68	102	138
b	18	20	20
f	2	3	3
n	4	4	8
d2	14	18	18
P_N [bar]	≤ 40	≤ 40	≤ 16

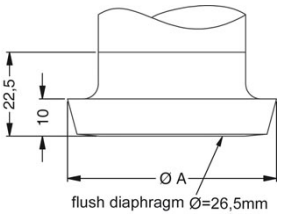


flange DRD [4]



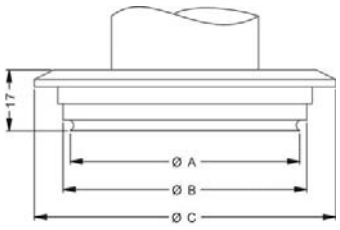
Clamp (DIN 32676)

dimensions in mm		
size	DN32	DN50
A	50.5	64
P_N [bar]	≤ 16	≤ 16



dairy pipe (DIN 11851)

dimensions in mm		
size	DN40	DN50
A	56	68.5



Varivent®
P_N ≤ 10 bar

dimensions in mm	
size	DN40/50
A	64
B	68
C	84

[4] mounting flange is included in the delivery (already pre-assembled)

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BD|SENSORS pressure measurement

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Ordering code DMK 351P

DMK 351P □□□-□□□□-□-□-□□□-□□□-□-□-□-□□□

Pressure			
	gauge	295	
	absolute [1]	296	
Input	**[mH_2O]**	**[bar]**	
	0.4	0.04	0400
	0.6	0.06	0600
	1.0	0.10	1000
	1.6	0.16	1600
	2.5	0.25	2500
	4.0	0.40	4000
	6.0	0.60	6000
	10	1.0	1001
	16	1.6	1601
	25	2.5	2501
	40	4.0	4001
	60	6.0	6001
	100	10	1002
	160	16	1602
	200	20	2002
	customer		9999 consult
Output			
	4 … 20 mA / 2-wire		1
	0 … 10 V / 3-wire		3 consult
	intrinsic safety 4 … 20 mA / 2-wire		E
	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		100
	male plug Binder series 723 (5-pin)		200
	male plug M12x1 (4-pin) / metal		M10
	cable outlet with PVC cable (IP67) [2]		TA0
	cable outlet, cable with ventilation tube (IP68) [3]		TR0
	compact field housing stainless steel 1.4301 (304)		850
	customer		999 consult
Mechanical connection			
	G 1 1/2" DIN flush (DIN 3852)		M00
	Clamp DN 32 (DIN 32676)		C62
	Clamp DN 50 (DIN 32676)		C63
	dairy pipe DN 40 (DIN 11851) [4]		M75
	dairy pipe DN 50 (DIN 11851) [4]		M76
	Varivent® DN 40/50 ($p_N \leq 10$ bar)		P41 consult
	flange DN 25 / PN 40 (DIN 2501)		F20 consult
	flange DN 50 / PN 40 (DIN 2501)		F23 consult
	flange DN 80 / PN 16 (DIN 2501)		F14 consult
	customer		999 consult
Seals			
	FKM		1
	EPDM		3
	customer		9 consult
Pressure port			
	stainless steel 1.4404 (316L)		1
	customer		9 consult
Diaphragm			
	ceramics Al_2O_3 96 %		2
	ceramics Al_2O_3 99.9 %		C
	customer		9 consult
Special version			
	standard		000
	customer		999 consult

[1] absolute pressure from 0.04 bar up to 0.25 bar on request

[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] The cup nut has to be mounted by production of pressure transmitter with electrical connection field housing and mechanical connection dairy pipe. The cup nut has to be ordered as separate position.

Varivent® is a brand name of GEA Tuchenhagen GmbH

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