

# 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<sub>2</sub>O<sub>3</sub>
- ▶ 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.

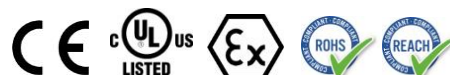
By using our own-developed capacitive sensor, optionally available as Al<sub>2</sub>O<sub>3</sub> 99.9%, the DMK 351 offers a high overpressure resistance and a high temperature and media resistance. The pressure transmitter is available in an intrinsically safe version for a use in explosive environments.

### Preferred areas of use are

-  Plant and machine engineering
-  Laboratory techniques

### Preferred used for

-  Fuel and oil
-  Water



<b>Pressure ranges</b>																
Nominal pressure <sup>1</sup>	[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
Permissible vacuum	[bar]	-0.2		-0.3		-0.5			-1							
<sup>1</sup> available in gauge and absolute; nominal pressure ranges absolute from 1 bar																
<b>Output signal / Supply</b>																
Standard	2-wire:	4 ... 20 mA / V <sub>S</sub> = 9 ... 32 V <sub>DC</sub>														
Option IS-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 <sup>2</sup>	standard:	≤ ± 0.35 % FSO														
	option for p <sub>N</sub> ≥ 0.6 bar:	≤ ± 0.25 % FSO														
Permissible load	current 2-wire:	R <sub>max</sub> = [(V <sub>S</sub> - V <sub>Smin</sub> ) / 0.02 A] 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 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							
<sup>2</sup> accuracy according to IEC 60770 - limit point adjustment (non-linearity, hysteresis, repeatability)																
<b>Thermal effects (offset and span)</b>																
Tolerance band	≤ ± 1 % FSO															
in compensated range	-20 ... 80 °C															
<b>Permissible temperatures</b>																
Medium <sup>3</sup>	-40 ... 125 °C															
Electronics / environment	-40 ... 85 °C															
Storage	-40 ... 100 °C															
<sup>3</sup> for pressure port in PVDF or PP the medium temperature is -30 ... 60 °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</b>																
Pressure port	standard: stainless steel 1.4404 (316L)								option <sup>4</sup> : PP, PVDF							
Housing	standard: stainless steel 1.4404 (316L)								option <sup>4</sup> : 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 <sub>2</sub> O <sub>3</sub> 96 %								option: ceramics Al <sub>2</sub> O <sub>3</sub> 99.9 %							
Media wetted parts	pressure port, seals, diaphragm															
<sup>4</sup> only with mech. connection G1/2" DIN 3852 open port, bore 12 mm, p <sub>N</sub> ≤ 10 bar and without explosion protection possible																
<b>Explosion protection (only for 4 ... 20 mA / 2-wire with stainless steel version)</b>																
Approval DX 14-DMK 351	IBExU 05 ATEX 1070 X								option: II 1G Ex ia IIC T6 Ga							
	zone 0: II 1G Ex ia IIC T4 Ga															
	zone 20: II 1D Ex ia IIIC T85 °C Da															
Safety technical maximum values	U <sub>i</sub> = 28 V <sub>DC</sub> ; I <sub>i</sub> = 93 mA; P <sub>i</sub> = 660 mW; C <sub>i</sub> ≤ 27 nF; L <sub>i</sub> ≤ 5 μH; C <sub>gnd</sub> = 27 nF															
Max. permissible temperature for environment	in zone 0: -20 ... 60 °C for p <sub>atm</sub> 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							
<b>Miscellaneous</b>																
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															

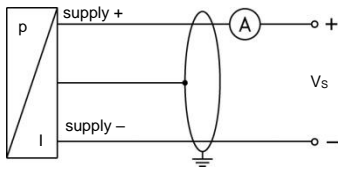
# DMK 351

Pressure Transmitter

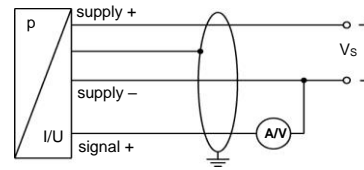
Technical Data

## Wiring diagram

2-wire-system (current)



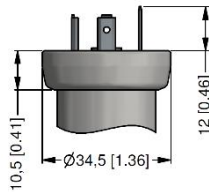
3-wire-system (current / voltage)



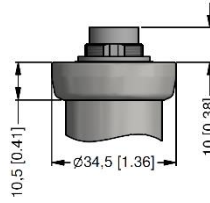
## Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	compact field housing	cable colours (IEC 60757)
Supply +	1	3	1	V <sub>S+</sub>	WH (white)
Supply -	2	4	2	V <sub>S-</sub>	BN (brown)
Signal + (only for 3-wire)	3	1	3	S+	GN (green)
Shield	ground pin	5	4	GND	GNYE (green-yellow)

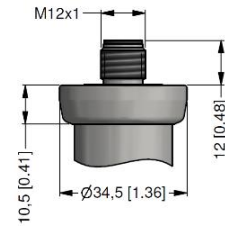
## Electrical connections (dimensions mm / in)



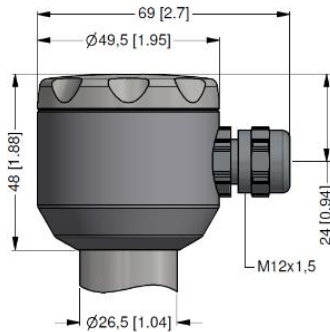
ISO 4400 (IP 65)



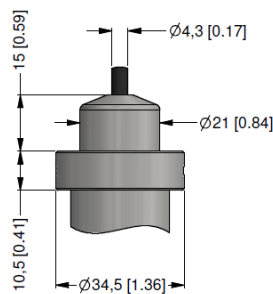
Binder series 723, 5-pin (IP 67)



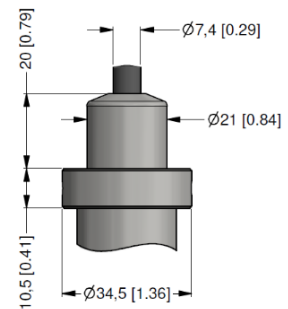
M12x1, 4-pin (IP 67)



compact field housing (IP 67)



cable outlet with PVC-cable (IP 67) <sup>5</sup>



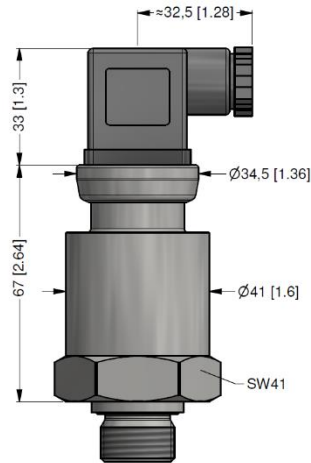
cable outlet, cable with ventilation tube (IP 68) <sup>6</sup>

⇒ universal field housing stainless steel 1.4404 (316 L) with cable gland M20x1.5 (ordering code 880) and other versions on request

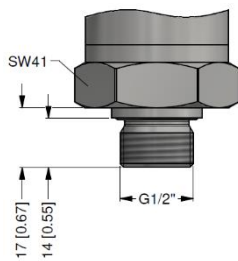
<sup>5</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70 °C)

<sup>6</sup> different cable types and lengths available, permissible temperature depends on kind of cable

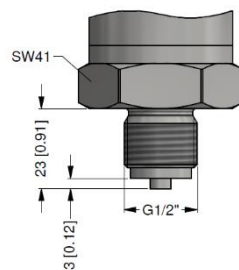
### Dimensions (mm / in)



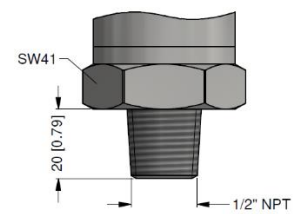
### Mechanical connection (dimensions mm / in)



G1/2" DIN 3852

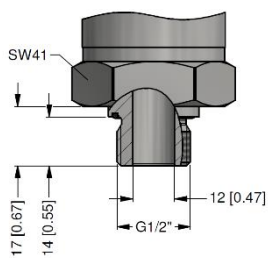


G1/2" EN 837

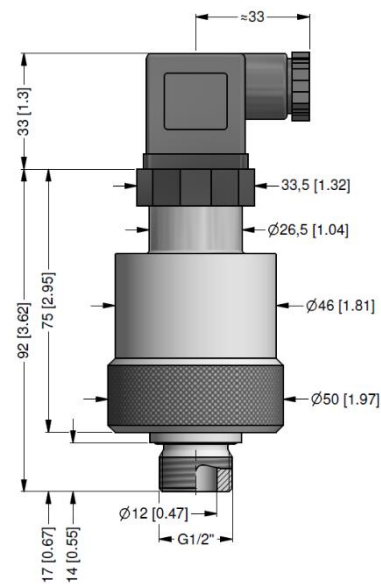


1/2" NPT

### G1/2" DIN 3852 open port, bore 12 mm:



housing and pressure port in stainless steel

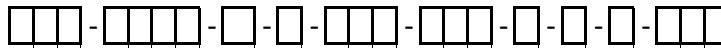


housing and pressure port in PP / PVDF  
for  $p_N \leq 10$  bar, without explosion protection

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## Ordering code DMK 351

DMK 351



<b>Pressure</b>											
	in bar, gauge	2	9	0							
	in bar, absolute <sup>1</sup>	2	9	1							
	in mH <sub>2</sub> O, gauge	2	9	2							
<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					
	160	16	1	6	0	2					
	200	20	2	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 T4; 4 ... 20 mA / 2-wire					E					
	intrinsic safety T6; 4 ... 20 mA / 2-wire					E6					
	customer					9					consult
<b>Accuracy</b>											
	standard:	0.35 % FSO				3					
	option for p <sub>N</sub> ≥ 0.6 bar:	0.25 % FSO				2					
	customer					9					consult
<b>Electrical connection</b>											
	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) <sup>2</sup>					T	A	0			
	cable outlet,										
	cable with ventilation tube (IP68) <sup>3</sup>					T	R	0			
	compact field housing										
	stainless steel 1.4301 (304)					8	5	0			
	customer					9	9	9			consult
<b>Mechanical connection</b>											
	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
<b>Seals</b>											
	FKM					1					
	EPDM					3					
	customer					9					consult
<b>Pressure port</b>											
	stainless steel 1.4404 (316L)								1		
	PP <sup>4</sup>								E		
	PVDF <sup>4</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	0	0
	customer								9	9	9
											consult

<sup>1</sup> nominal pressure ranges absolute from 1 bar

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

<sup>3</sup> code TR0 = PVC cable, cable with ventilation tube available in different types and lengths

<sup>4</sup> PP / PVDF possible only with G1/2" DIN 3852 open pressure port, p<sub>N</sub> ≤ 10 bar and without explosion protection; permissible medium temperature: -30 ... 60 °C