



# DMK 331P

## Industrial Pressure Transmitter

### Pressure Ports With Flush Welded Stainless Steel Diaphragm

accuracy according to IEC 60770:  
0.5 % FSO

DMK 331P Industrial Pressure Transmitter

#### Nominal pressure

from 0 ... 60 bar  
up to 0 ... 400 bar

#### Output signals

2-wire: 4 ... 20 mA  
3-wire: 0 ... 20 mA / 0 ... 10 V  
others on request

#### Special characteristics

- ▶ suited for viscous and pasty media

#### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe for gases and dusts
- ▶ SIL 2  
according to IEC 61508 / IEC 61511
- ▶ food compatible oil filling with FDA approval
- ▶ cooling element for media temperatures up to 300 °C
- ▶ customer specific versions



The pressure transmitter DMK 331P is suitable for measuring the pressure of viscous and pasty media, where a totally flush pressure port is required.

As on all industrial pressure transmitters made by BD|SENSORS, you may choose between various electrical and mechanical connections also on DMK 331P.

#### Preferred areas of use are



Plant and Machine Engineering



Food Industry

#### Preferred used for



Viscous and Pasty Media

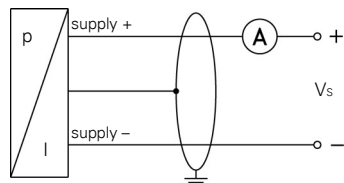
Input pressure range						
Nominal pressure gauge / abs.	[bar]	60	100	160	250	400
Overpressure	[bar]	100	200	400	400	600
Burst pressure ≥	[bar]	120	250	500	500	650
Output signal / Supply						
Standard	2-wire: 4 ... 20 mA / V <sub>s</sub> = 8 ... 32 V <sub>DC</sub>					
Option IS-protection	2-wire: 4 ... 20 mA / V <sub>s</sub> = 10 ... 28 V <sub>DC</sub>					
Options 3-wire	3-wire: 0 ... 20 mA / V <sub>s</sub> = 14 ... 30 V <sub>DC</sub> 0 ... 10 V / V <sub>s</sub> = 14 ... 30 V <sub>DC</sub>					
Performance						
Accuracy <sup>1</sup>	≤ ± 0.5 % FSO					
Permissible load	current 2-wire: R <sub>max</sub> = [(V <sub>s</sub> – V <sub>s min</sub> ) / 0.02] Ω current 3-wire: R <sub>max</sub> = 500 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	≤ ± 0.3 % FSO / year at reference conditions					
Response time	2-wire: ≤ 10 msec 3-wire: ≤ 3 msec					
<sup>1</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)						
Thermal effects (Offset and Span) <sup>2</sup> / Permissible temperatures						
Thermal error	≤ ± 0.2 % FSO / 10 K					
in compensated range	-20 ... 85°C					
Permissible temperatures <sup>3</sup>	medium: -40 ... 125 °C for filling fluid silicon oil -10 ... 125 °C for filling fluid food compatible oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C					
Permissible temperature medium for cooling element 300°C	filling fluid silicon oil		overpressure: -40 ... 300 °C		vacuum: -40 ... 150 °C	
	filling fluid food compatible oil		overpressure: -10 ... 250 °C		vacuum: -10 ... 150 °C	
<sup>2</sup> an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions. <sup>3</sup> max. temperature of the medium for overpressure > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °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	20 g RMS (25 ... 2000 Hz)		according to DIN EN 60068-2-6			
Shock	500 g / 1 msec		according to DIN EN 60068-2-27			
Filling fluids						
Standard	silicon oil					
Options	food compatible oil (with FDA approval) (Mobil DTE FM 32; Category Code: H1; NSF Registration No.: 130662) others on request					
Materials						
Pressure port	stainless steel 1.4404 (316 L)					
Housing	stainless steel 1.4404 (316 L)					
Option compact field housing	stainless steel 1.4305 (303) with cable gland brass, nickel plated				others on request	
Seals (media wetted)	standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures > 200 °C) others on request					
Diaphragm	stainless steel 1.4435 (316 L)					
Media wetted parts	pressure port, seals, diaphragm					
Explosion protection (only for 4 ... 20 mA / 2-wire)						
Approval DX 19 - DMK 331P	IBExU 10 ATEX 1068 X zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ta IIIC T 85°C, IP6x <b>in preparation</b>					
Safety technical maximum values	U <sub>i</sub> = 28 V, I <sub>i</sub> = 93 mA, P <sub>i</sub> = 660 mW, C <sub>i</sub> ≈ 0 nF, L <sub>i</sub> ≈ 0 μH					
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar in zone 1 or higher: -20 ... 70 °C					
Connecting cables (by factory)	cable capacitance: 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>	
Option SIL 2	according to IEC 61508 / IEC 61511
Current consumption	signal output current: max. 25 mA signal output voltage: max. 5 mA
Weight	min. 200 g (depending on process connection)
Installation position	any (standard calibration in a vertical position with the pressure port connection down)
Operational life	> 100 x 10 <sup>6</sup> pressure cycles
CE-conformity	EMC Directive: 2004/108/EC      Pressure Equipment Directive: 97/23/EC (module A) <sup>4</sup>

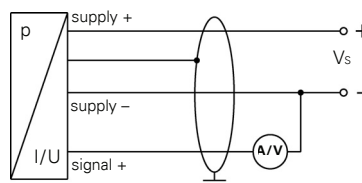
<sup>4</sup> This directive is only valid for devices with maximum permissible overpressure > 200 bar

#### Wiring diagrams

2-wire-system (current)



3-wire-system (current / voltage)

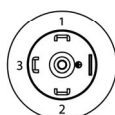
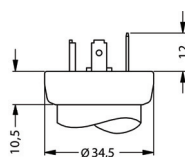


#### Pin configuration

Electrical connection	ISO 4400	Binder 723 (5-pin)	M12x1 / metal (4-pin)	field housing	cable colours (DIN 47100)
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	⏏	gn/ye (green / yellow)

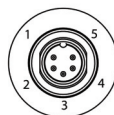
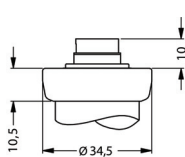
#### Electrical connection (dimensions in mm)

standard

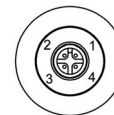
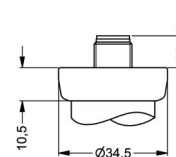


ISO 4400  
(IP 65)

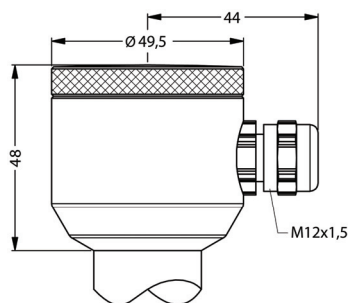
option



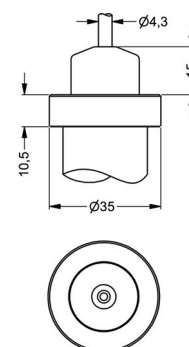
Binder Series 723 5-pin  
(IP 67)



M12x1 4-pin  
(IP 67)



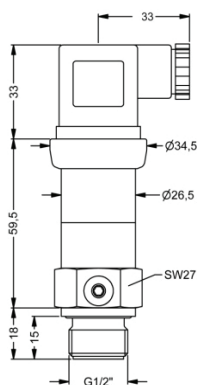
compact field housing  
(IP 67)



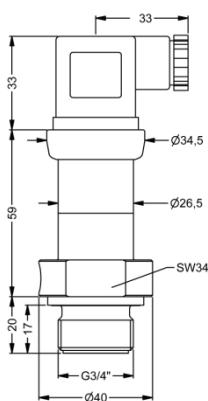
cable outlet with PVC cable  
(IP 67) <sup>5</sup>

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

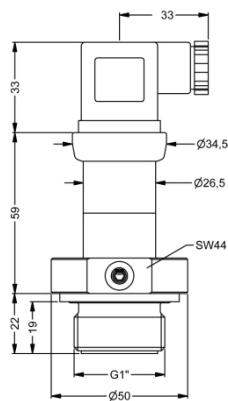
<sup>5</sup> standard: 2 m PVC cable without ventilation tube (permissible temperature: -5 ... 70°C)

**Mechanical connection (dimensions in mm)****standard**

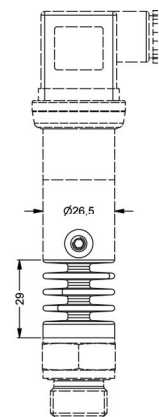
G1/2" flush  
with ISO 4400

**option**

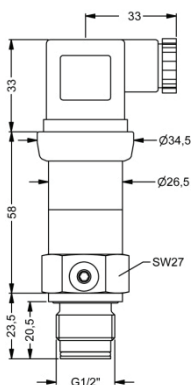
G3/4" flush  
with ISO 4400



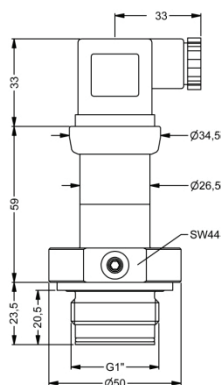
G1" flush  
with ISO 4400



cooling element  
300 °C <sup>6</sup>



G1/2" flush  
with radial o-ring



G1" flush  
with radial o-ring

- ⇒ **SIL- and SIL-Ex version: total length increases by 26.5 mm!**
- ⇒ **metric threads and other versions on request**

<sup>6</sup> possible for nominal pressure ranges  $P_N \leq 160$  bar

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<sup>2</sup> only for pressure  $\leq 160$  bar