

# LIM-5000

## Industrial Pressure Transmitter

Process Connections With  
Flush Welded Stainless Steel  
Diaphragm

accuracy according to EN IEC 62828-2:  
standard: 0.35 % span  
option: 0.25 % span

### Nominal pressure

from 0 ... 100 mbar up to 0 ... 40 bar

### Output signals

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

### Special characteristics

- ▶ hygienic version
- ▶ CIP / SIP cleaning up to 150 °C
- ▶ vacuum resistant

### Optional versions

- ▶ IS-version  
Ex ia = intrinsically safe for gases and dust
- ▶ SIL 2  
according to IEC 61508 / IEC 61511
- ▶ Diaphragm in  
Hastelloy® or Tantalum
- ▶ cooling element for media  
temperatures up to 300 °C

The pressure transmitter LIM-5000 was designed for use in the food / beverage and pharmaceutical industry. The compact design with hygienic versions makes it possible to achieve an outstanding performance in terms of accuracy, temperature behavior and long term stability.

The modular construction concept allows a combination of various process connections with different filling fluids and a cooling element. Several electrical connections complete the profile of LIM-5000.

### Preferred areas of use are



Food and Beverage



Pharmaceutical Industry

### Material and test certificates

inspection certificate 3.1  
according to DIN EN 10204



TYPE EL - CLASS I  
REVISED 2011

Input pressure range <sup>1</sup>									
Nominal pressure gauge*	[bar]	-1...0	0.10	0.16	0.25	0.40	0.60	1	1.6
Nominal pressure abs.*	[bar]	-	-	-	-	0.40	0.60	1	1.6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10
Burst pressure ≥	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15
Nominal pressure gauge / abs.									
	[bar]	2.5	4	6	10	16	25	40	
Overpressure	[bar]	10	20	40	40	80	80	105	
Burst pressure ≥	[bar]	15	25	50	50	120	120	210	
Vacuum resistance		P <sub>N</sub> > 1 bar: unlimited vacuum resistance P <sub>N</sub> ≤ 1 bar: on request							
<sup>1</sup> consider the pressure resistance of fitting and clamps									
* for 0 ... 1 bar abs. or -1 ... 0 bar gauge max. temperature 70°C									
Output signal / Supply									
Standard		2-wire: 4 ... 20 mA / V <sub>S</sub> = 8 ... 32 V <sub>DC</sub>				SIL-version: V <sub>S</sub> = 14 ... 28 V <sub>DC</sub>			
Option IS-protection		2-wire: 4 ... 20 mA / V <sub>S</sub> = 10 ... 28 V <sub>DC</sub>				SIL-version: V <sub>S</sub> = 14 ... 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>2</sup>		standard: nominal pressure < 0.4 bar : ≤ ± 0.5 % span nominal pressure ≥ 0.4 bar : ≤ ± 0.35 % span option: nominal pressure ≥ 0.4 bar : ≤ ± 0.25 % span							
Permissible load		current 2-wire: R <sub>max</sub> = [(V <sub>S</sub> - V <sub>S min</sub> ) / 0.02 A] Ω current 3-wire: R <sub>max</sub> = 500 Ω voltage 3-wire: R <sub>min</sub> = 10 kΩ							
Influence effects		supply: 0.05 % span / 10 V				load: 0.05 % span / kΩ			
Long term stability		≤ ± 0.1 % span / year at reference conditions							
Response time		2-wire: < 10 msec				3-wire: ≤ 3 msec			
<sup>2</sup> accuracy according to EN IEC 62828-2- limit point adjustment (non-linearity, hysteresis, repeatability)									
Thermal effects (Offset and Span) <sup>3</sup> / Permissible temperatures									
Nominal pressure P <sub>N</sub>	[bar]	-1 ... 0			< 0.40			≥ 0.40	
Tolerance band	[% span]	≤ ± 0.75			≤ ± 1,5			≤ ± 0.75	
in compensated range	[°C]	-20 ... 85			0 ... 50			-20 ... 85	
Permissible temperatures <sup>4</sup>		medium <sup>4</sup> : -40 ... 125 °C for filling fluid silicon oil -10 ... 125 °C for filling fluid food grade oil electronics / environment: -40 ... 85 °C storage: -40 ... 100 °C							
Permissible temperature medium for cooling element <sup>5</sup>		filling fluid silicon oil		overpressure: -40 ... 300 °C		vacuum: -40 ... 150 °C <sup>6</sup>			
		filling fluid food grade oil		overpressure: -10 ... 250 °C		vacuum: -10 ... 150 °C <sup>6</sup>			
<sup>3</sup> an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions.									
<sup>4</sup> max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C									
<sup>5</sup> max. temperature depends on the used sealing material, type of seal and installation									
<sup>6</sup> also for P <sub>abs</sub> ≤ 1 bar									
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 according to DIN EN 60068-2-6		G 1/2": 20 g RMS (25 ... 2000 Hz)			others: 10 g RMS (25 ... 2000 Hz)				
Shock according to DIN EN 60068-2-27		G 1/2": 500 g / 1 msec			others: 100 g / 1 msec				
Filling fluids									
Standard		silicon oil							
Options		food grade oil, compliant with 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) others on request							
Materials									
Pressure port		stainless steel 1.4404 (316 L)			others on request				
Housing		stainless steel 1.4404 (316 L)							
Option field housing		stainless steel 1.4301 (304), cable gland M16x1.5 brass, nickel plated (clamping range 2...8 mm)							
Seals (media wetted)		standard: FKM (recommended for medium temperatures ≤ 200 °C) option: FFKM (recommended for medium temperatures < 260 °C) others on request							
Standard		Clamp, dairy pipe, Varivent®: without							
Optional									
Diaphragm		stainless steel 1.4435 (316 L)							
Standard		Hastelloy® C-276 (2.4819)			Tantalum on request				
Optional									
Media wetted parts		pressure port, seal, diaphragm							

# LIM-5000

Industrial Pressure Transmitter

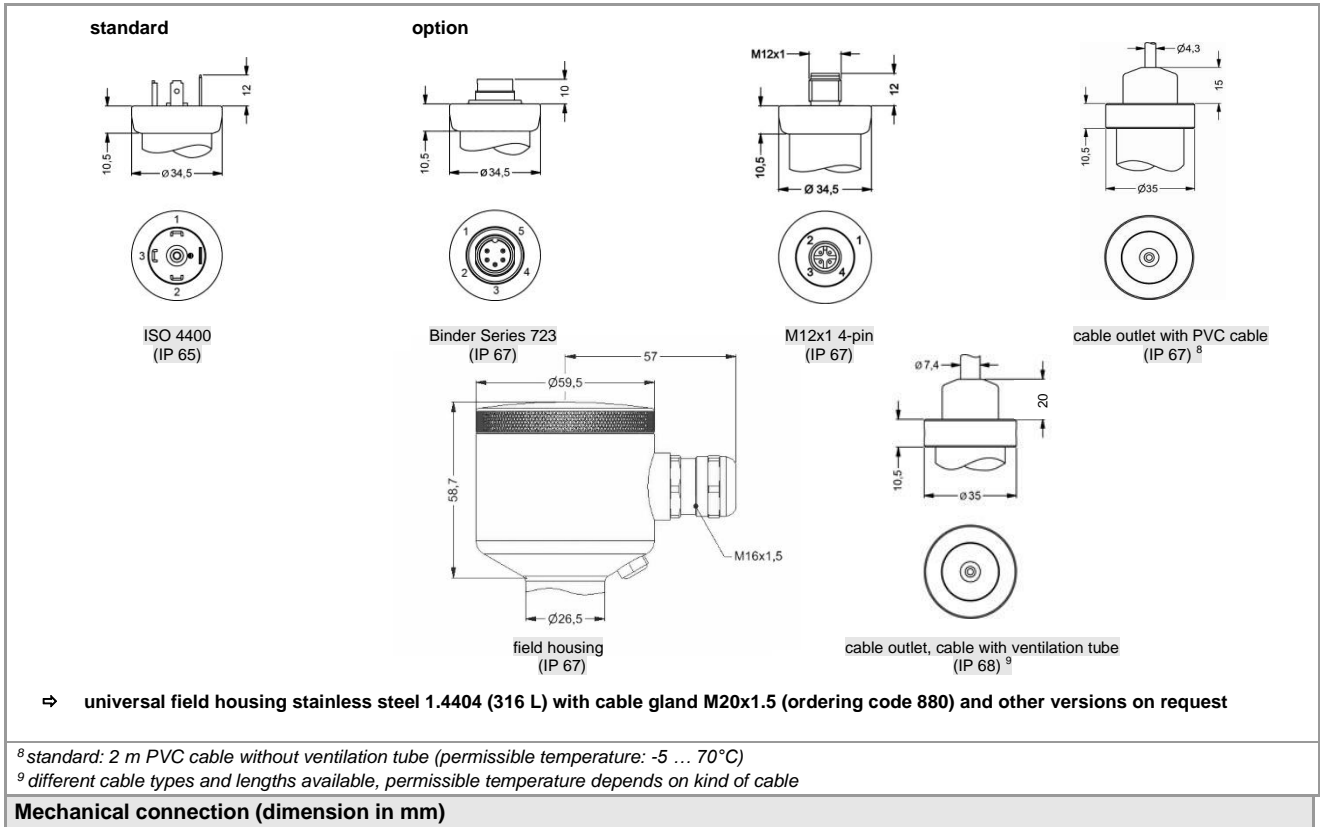
Technical Data

<b>Explosion protection (only for 4 ... 20 mA / 2-wire)</b>					
Approvals DX9-DMP 331P	<b>IBExU10ATEX1122 X</b> zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T135°C Da				
Safety technical maximum values	$U_i = 28 \text{ V}$ , $I_i = 93 \text{ mA}$ , $P_i = 660 \text{ mW}$ , $C_i \approx 0 \text{ nF}$ , $L_i \approx 0 \text{ }\mu\text{H}$ , the supply connections have an inner capacity of max. 27 nF to the housing				
Ambient temperature range	in zone 0: -20 ... 60 °C with $p_{\text{atm}}$ 0.8 bar up to 1.1 bar in zone 1 or higher: -40/-20 ... 70 °C (lower temperature limit depends on the type of cable used)				
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 $\mu\text{H}/\text{m}$				
<b>Miscellaneous</b>					
Option SIL <sup>7</sup> 2	according to IEC 61508 / IEC 61511				
EHEDG certificate Type EL Class I	EHEDG conformity is only ensured in combination with an approved seal. This is e.g. for - Clamp (C61, C62, C63): T-ring-seal from Combifit International B.V. - Varivent □ (P41): EPDM-O-ring which is FDA-listed - dairy pipe (M73, M75, M76): ASEPTO-STAR k-flex upgrade seal by Kieselmann GmbH				
Current consumption	signal output current: max. 25 mA signal output voltage: max. 7 mA				
Surface roughness	pressure port Ra < 0.8 $\mu\text{m}$ (media wetted parts) diaphragm Ra < 0.15 $\mu\text{m}$ weld seam Ra < 0.8 $\mu\text{m}$				
Weight	min. 200 g (depending on process connection)				
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position for $P_N \leq 2 \text{ bar}$ have to be specified in the order)				
Operational life	> 100 x 10 <sup>6</sup> pressure cycles				
CE-conformity	EMC Directive: 2014/30/EU				
ATEX Directive	2014/34/EU				
<sup>7</sup> only for 4 ... 20 mA / 2-wire					
<b>Wiring diagrams</b>					
2-wire-system (current)			3-wire-system (current / voltage)		
<b>Pin configuration</b>					
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 3-wire)	3	1	3	OUT+	gn (green)
Shield	ground pin ⊕	5	4	⊕	ye/gn (yellow / green)
<b>Electrical connections (dimensions in mm)</b>					

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Technical Data

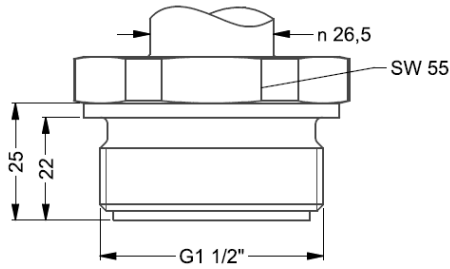


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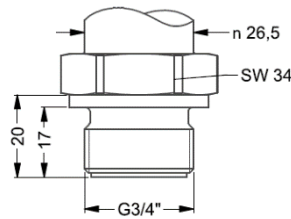
Technical Data

## Standard

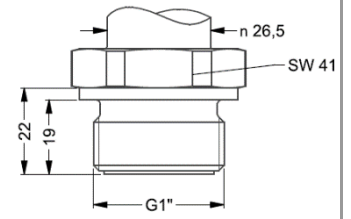


G1/2" flush DIN 3852<sup>10</sup>

## Option

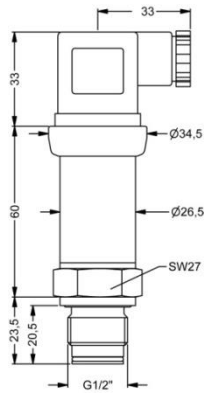


G 3/4" flush DIN 3852 with ISO 4400

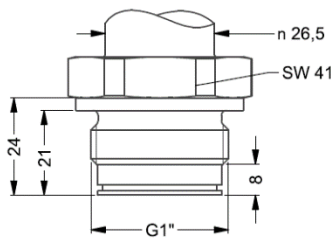


G1" flush DIN 3852 with ISO 4400

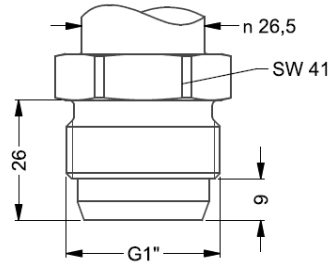
## Option



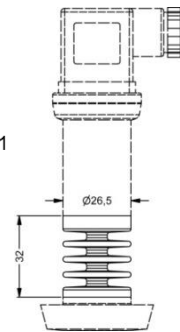
G1/2" flush with radial o-ring<sup>10</sup>



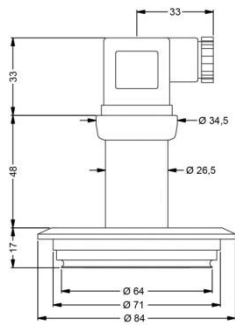
G1" flush with 2 radial o-ring (PN > 0,25 bar)



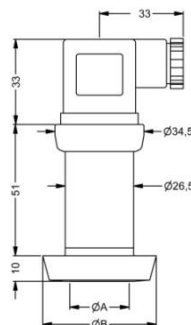
G1" cone with ISO 4400



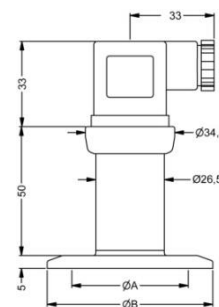
cooling element 300 °C



Varivent<sup>10</sup>  
PN ≤ 10 bar



dairy pipe (DIN 11851) with ISO 4400



Clamp (DIN 32676) with ISO 4400

dimension in mm			
size	DN 25	DN 40	DN 50
A	23	32	45
B	44	56	68,5
PN [bar]	≥ 0,25 ≤ 40	≥ 0,25 ≤ 40	≥ 0,25 ≤ 25

dimension in mm				
size	3/4"	DN 25	DN 32	DN 45
A	14	23	32	45
B	25	50,5	50,5	64
PN [bar]	≥ 4 ≤ 8	≥ 0,25 ≤ 16	≤ 16	≤ 16

\* higher pressure ranges on request

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

<sup>10</sup> possible only for PN ≥ 1 bar; max. temperature depends on the used sealing material, type of seal and installation