

## PBMH

Fully welded pressure transmitter for hygienic applications

PBMH-2#####0##

### Overview

- 3-A sanitary standards, FDA-compliant, EHEDG-certified
- Resistant to all common CIP cleaning media and SIP-capable (150 °C max, < 30 min)
- Versions available for high media temperatures (200 °C)
- Surface roughness connection  $Ra \leq 0.8$  for highest hygienic requirements
- Fully welded and compact design for washdowns without residuals
- Excellent active temperature compensation for increased process stability
- External programming of zero point and span with FlexProgrammer 9701
- Absolute pressure, relative pressure and vacuum measurement



### Technical data

#### Performance characteristics

Pressure type	Absolute Relative (gauged)
Compensated temperature range	-40 ... 85 °C
Long term stability	$\leq 0.1$ % FSR/a, measuring range > 1 bar $\leq 1$ mbar, measuring range $\leq 1$ bar
Max. measuring error	$\pm 0.1$ % FSR $\pm 0.25$ % FSR Including zero-point and span error, non-linearity (by terminal base line), hysteresis and non-repeatability (EN 61298-2) For turndown, multiply this value by the applied turndown ratio
Max. measuring span	40 bar
Max. turndown ratio	5 : 1
Measuring range	-1 ... 40 bar
Standard error of measurement (BFSL)	$\pm 0.04$ % FSR $\pm 0.1$ % FSR Including non-linearity, hysteresis and non-repeatability according BFSL For turndown, multiply this value by the applied turndown ratio
Min. measuring span	0.1 bar
Rise time (10 ... 90 %)	$\leq 5$ ms
Temperature coefficient	$\leq 0.03$ % FSR/10 K, measuring span $\leq 0.03$ % FSR/10 K, zero point

#### Process conditions

Process temperature	-40 ... 125 °C, without cooling neck -40 ... 200 °C, with cooling neck
Process pressure	Refer to section "Operating conditions"
SIP/CIP compatibility	< 60 min, without cooling neck @ medium temperature up to 150 °C Permanent, with cooling neck @ medium temperature up to 200 °C

#### Process connection

Connection variants	Refer to section "Dimensional drawings"
Wetted parts material, process connection	AISI 316L (1.4404) AISI 316L (1.4435)
Wetted parts material, membrane	AISI 316L (1.4435)
Wetted parts material, gasket	EPDM, optional EPDM O-rings are conform to 3-A Sanitary Standard 18-03 Class II, EPDM gaskets are conform to 3-A Sanitary Standard 18-03 Class I (8% milk fat max.)

#### Surface roughness (in contact with medium)

Membrane	$Ra \leq 0.4 \mu m$
Process connection Baumer Hygienic Connection	$Ra \leq 0.8 \mu m$
Process connection Tri-Clamp	$Ra \leq 0.4 \mu m$
Process connection Varivent®	$Ra \leq 0.8 \mu m$
Weld joint	$Ra \leq 0.8 \mu m$

#### Ambient conditions

Operating temperature range	-40 ... 85 °C
Storage temperature range	-40 ... 85 °C
Degree of protection (EN 60529)	IP 65, with connector DIN EN 175301-803 A (DIN 43650 A), 4-pin IP 67, with connection head IP 67, with connector M12-A, 4-pin IP 67, with shielded cable
Bump (EN 60068-2-27)	100 g / 2 ms, 4000 impulses per axis and direction
Shock (EN 60068-2-27)	50 g / 11 ms, 100 g / 6 ms, 10 impulses per axis and direction

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#### Ambient conditions

Vibration (sinusoidal) (EN 60068-2-6)	1.5 mm p-p (10 ... 58 Hz), 10 g (58 Hz ... 2 kHz), 10 cycles (2.5 h) per axis
Vibration, broad-band random (EN 60068-2-64)	0.1 g <sup>2</sup> / Hz, > 10 gRMS (20 Hz ... 1 kHz), 30 min. per axis

#### Output signal

Current output	4 ... 20 mA, 2-wire 20 ... 4 mA, 2-wire
Voltage output	0 ... 10 V, 3-wire 0 ... 5 V, 3-wire 0.5 ... 4.5 V, 3-wire 1 ... 5 V, 3-wire 10 ... 0 V, 3-wire
Load resistance	> 5 kΩ, with voltage output R = (U <sub>ver</sub> - 8 V)/20 mA, with current output
Insulation resistance	> 100 MΩ, 500 V DC
Short circuit protection	Yes
Shunt resistance	R <sub>s</sub> ≤ (V <sub>s</sub> - 8 V)/0.0205 A R <sub>s</sub> ≤ 750 Ω, V <sub>s</sub> = 24 V

#### IO-Link interface

IO-Link version	1.1
IO-Link port type	Class A
Baud rate	38,4 kbaud (COM2)
Cycle time	≥ 2.3 ms
Process data length	24 bit
SIO-mode	No
Process data (cyclic)	Process pressure
Diagnostic data (acyclic)	Process temperature

#### Housing

Style	Compact transmitter
Overall size	Refer to section "Dimensional drawings"
Material	AISI 316L (1.4404)

#### Electrical connection

Connector	DIN EN 175301-803 A (DIN 43650 A), 4-pin M12-A, 4-pin
Cable gland	Cable Ø 8 ... 10, stainless steel
Cable outlet	1.5 m, 3-wire, shielded

#### Power supply

Voltage supply range	13 ... 30 V DC, with voltage output 8 ... 30 V DC, with current output 18 ... 30 V DC, with IO-Link
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#### ATEX II 1/2G Ex ia IIC T3/T4/T6 Ga/Gb

Please note	For the application in Ex zone you have to respect the conditions mentioned in the ATEX Type Examination Certificate (SEV 11 ATEX 0129). You will find the relevant certificates and instructions at <a href="http://www.baumer.com">www.baumer.com</a>
Maximum values for barrier selection, Ui	30 V DC, max.
Maximum values for barrier selection, Ii	100 mA
Maximum values for barrier selection, Pi	750 mW

#### ATEX II 1/2G Ex ia IIC T3/T4/T6 Ga/Gb

Internal capacitance, Ci	31 nF
Internal inductance, Li	3 µH
Temperature class, T4	-40 < Tamb < 85 °C
Temperature class, T6	-40 < Tamb < 70 °C

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#### ATEX II 1D Ex ia IIIC T (200) 107°C IP6X Da

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Voltage supply range, Un	30 V DC, max.
Degree of protection for cable accessories	IP 65

#### ATEX II 1G Ex ia IIC T3/T4/T6 Ga,

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#### ATEX II 1G Ex ia IIC T4/T6 Ga

Maximum values for barrier selection, Ii 100 mA

Maximum values for barrier selection, Pi 750 mW

Internal capacitance, Ci 31 nF

Internal inductance, Li 3 µH

#### Compliance and approvals

EMC EN 61000-6-2  
EN 61000-6-3

#### Compliance and approvals

Hygiene 3-A (74-07)

Explosion protection ATEX II 1/2G Ex ia IIC T4/T6 Ga/Gb  
ATEX II 1/2G Ex ia IIC T3/T4/T6 Ga/Gb  
ATEX II 1D Ex ia IIIC T (200) 107 °C IP6X Da  
ATEX II 1G Ex ia IIC T4/T6 Ga  
ATEX II 1G Ex ia IIC T3/T4/T6 Ga

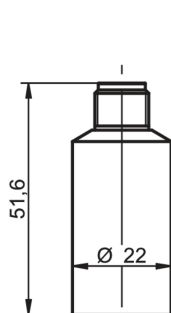
Pressure directive EHEDG EL Class I

### Operating conditions

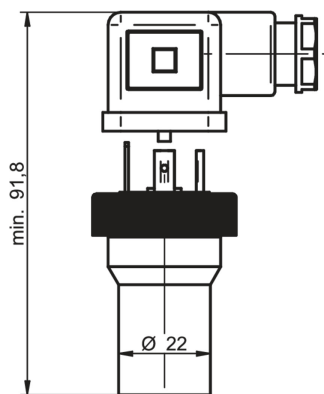
Measuring range (bar)							Proof pressure (bar)	Burst Pressure (bar)
0 ... 0,1   0 ... 0,16   0 ... 0,25							1	2
-0,1 ... 0,1   -0,2 ... 0,2   -1 ... 0	-1 ... 0,6	0 ... 0,4	0 ... 0,6	0 ... 1			3	6
	-1 ... 1,5   -1 ... 3	-1 ... 5	0 ... 1,6	0 ... 2	0 ... 2,5	0 ... 4	15	30
		-1 ... 9	-1 ... 15	0 ... 6	0 ... 10	0 ... 16   0 ... 20	60	120
			-1 ... 24	0 ... 25			70	140
			-1 ... 39	0 ... 40			135	270

### Dimensional drawings (mm)

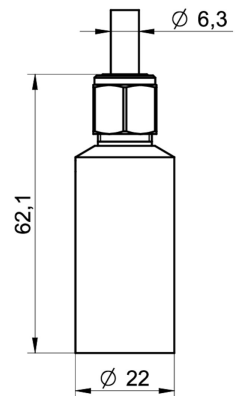
#### Housing



Housing with connector M12-A, 4-pin



Housing with connector DIN EN 175301-803 A (DIN 43650 A), 4-pin



Housing with cable outlet, 3-wire, 1.5 m length

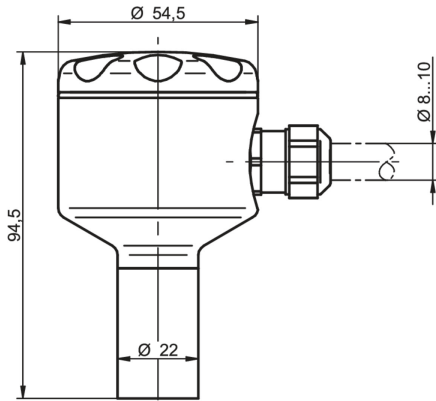
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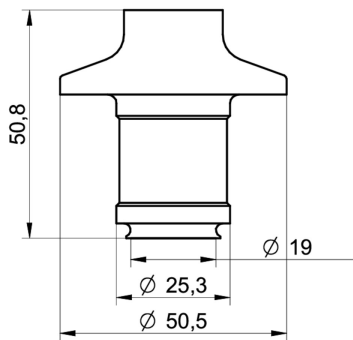
### Dimensional drawings (mm)

#### Housing

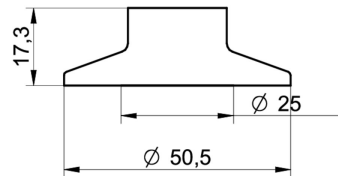


Field housing with cable gland

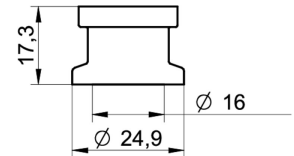
#### Process connection



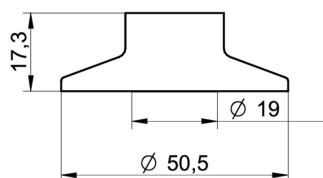
B01-50  
BHC 3A DN 38, membrane Ø 19 mm (BCID: B01)



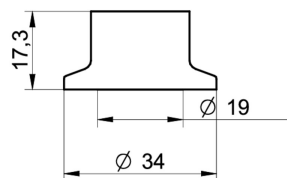
C04-51  
Tri-Clamp Ø 50.5, membrane Ø 25 mm (BCID: C04)



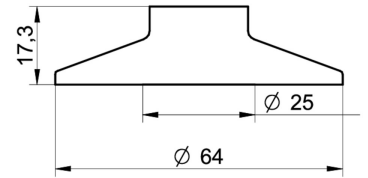
C01-52  
Tri-Clamp Ø 24.9, membrane Ø 16 mm (BCID: C01)



C03-53  
Tri-Clamp Ø 50.5, membrane Ø 19 mm (BCID: C03)



C02-57  
Tri-Clamp Ø 34.0, membrane Ø 19 mm (BCID: C02)



C05-54  
Tri-Clamp Ø 64.0, membrane Ø 25 mm (BCID: C05)

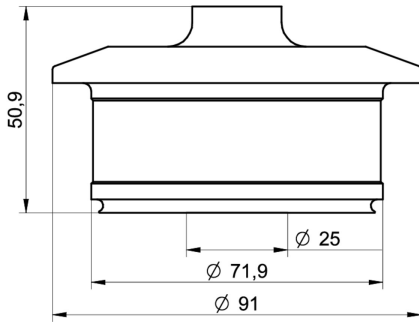
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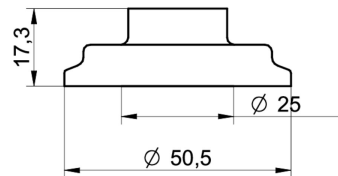
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### Dimensional drawings (mm)

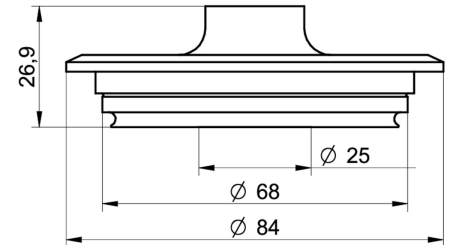
#### Process connection



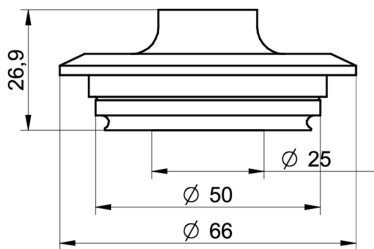
**B02-56**  
BHC 3A DN 76, membrane Ø 25 mm (BCID: B02)



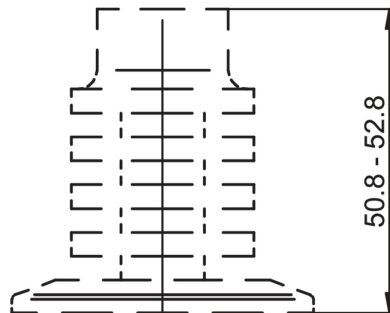
**H51-58**  
DIN 11864-3-A BKS (Aseptic Clamp), DN25, Ø 50.5, membrane Ø 25 mm (BCID: H41)



**V02-61**  
Varivent® DN 32 ... 125; 1 1/2" ... 6" (Type N), Ø 68, membrane Ø 25 mm (BCID: V02)



**V01-62**  
Varivent® DN 25; 1" (Type F), Ø 50, membrane Ø 25 mm (BCID: V01)



Cooling neck

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### Electrical connection

Output signal	Equivalent circuit	Electrical connection	Function	Pin assignment
4 ... 20 mA (2-wire)			+Vs	1
			Iout	3
			Frame Ground	Plug thread
0 ... 10 V (3-wire)			+Vs	1
			Uout	2, 4
			GND (0 V)	3
IO-Link (3-wire)			+Vs	1
			GND (0 V)	3
			SW1, IO-Link	4

### Ordering information

Ordering key - Configuration possibilities see website

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### Ordering information

Ordering key - Configuration possibilities see website

	PBMH	-	2	#	###	#	##	##	##	#	#	#	0	#	#
<b>Product</b>	PBMH														
<b>Housing material</b>															
Stainless steel 1.4404 AISI 316L			2												
<b>Accuracy</b>															
±0.25 % FS				4											
±0.10 % FS				5											
<b>Measuring range</b>															
0...0,1 bar (EN)					B08										
0...0,16 bar (EN)					B09										
0 ... 0.25 bar (EN)					B10										
0 ... 0.4 bar (EN)					B11										
0...0,6 bar (EN)					B12										
0...1 bar (EN)					B15										
0...1,6 bar (EN)					B16										
0...2 bar (EN)					B17										
0 ... 2.5 bar (EN)					B18										
0 ... 4 bar (EN)					B19										
0...12 bar (EN)					B1K										
-1...39 bar (EN)					B1L										
0 ... 6 bar (EN)					B20										
0 ... 10 bar (EN)					B22										
0 ... 16 bar (EN)					B24										
0...20 bar (EN)					B25										
0...25 bar (EN)					B26										
0 ... 40 bar (EN)					B27										
-0,1...0,1 bar (EN)					B2H										
-0,2...0,2 bar (EN)					B4G										
-0,6...0 bar (EN)					B58										
-1...0 bar (EN)					B59										
-1...0,6 bar (EN)					B72										
-1...1 bar (EN)					B73										
-1 ... 1,5 bar (EN)					B74										
-1...2 bar (EN)					B75										
-1...3 bar (EN)					B76										
-1...5 bar (EN)					B77										
-1...9 bar (EN)					B79										
-1...15 bar (EN)					B81										
-1...24 bar (EN)					B82										
0...5 bar (EN)					B98										
0...1.5 psi (ANSI)					H08										
0...4 psi (ANSI)					H10										
0...6 psi (ANSI)					H11										
0...10 psi (ANSI)					H13										
0...15 psi (ANSI)					H15										
0...25 psi (ANSI)					H16										
0...30 psi (ANSI)					H17										
0...60 psi (ANSI)					H19										
0...20 psi (ANSI)					H1C										
0...500 psi (ANSI)					H1E										
-30Hg...600 psi (ANSI)					H1L										

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Ordering key - Configuration possibilities see website

	PBMH	-	2	#	###	#	##	##	##	#	#	#	0	#	#
0...100 psi (ANSI)					H21										
0...160 psi (ANSI)					H22										
0...200 psi (ANSI)					H23										
0...250 psi (ANSI)					H24										
0...300 psi (ANSI)					H25										
0...400 psi (ANSI)					H26										
0...600 psi (ANSI)					H27										
-30HG...60 psi (ANSI)					H2C										
0...5 psi (ANSI)					H2N										
0...2 psi (ANSI)					H2Y										
-30HG...0 (ANSI)					H59										
-30HG...15 psi (ANSI)					H73										
-30HG...30 psi (ANSI)					H75										
-30HG...100 psi (ANSI)					H78										
-30HG...150 psi (ANSI)					H79										
-30HG...220 psi (ANSI)					H81										
-30HG...300 psi (ANSI)					H82										
0...3 psi (ANSI)					H93										
0...1 mH <sub>2</sub> O (EN)					J08										
0...1,6 mH <sub>2</sub> O (EN)					J09										
0...2,5 mH <sub>2</sub> O (EN)					J10										
0...4 mH <sub>2</sub> O (EN)					J11										
0...6 mH <sub>2</sub> O (EN)					J12										
0...10 mH <sub>2</sub> O (EN)					J15										
0...16 mH <sub>2</sub> O (EN)					J16										
0...20 mH <sub>2</sub> O (EN)					J17										
0...25 mH <sub>2</sub> O (EN)					J18										
0...40 mH <sub>2</sub> O (EN)					J19										
0...60 mH <sub>2</sub> O (EN)					J20										
0...100 mH <sub>2</sub> O (EN)					J22										
0...160 mH <sub>2</sub> O (EN)					J24										
0...200 mH <sub>2</sub> O (EN)					J25										
0...250 mH <sub>2</sub> O (EN)					J26										
<b>Kind of pressure</b>															
Relative (gauged)														R	
Absolute														A	
<b>Output signal</b>															
20...4 mA														A0	
4...20 mA														A1	
0...10 V														A2	
1...5 V														A3	
0...5 V														A4	
0.5...4.5 V														A5	
10...0 V														A7	
IO-Link or 4...20 mA V1														M1	
<b>Output Connection</b>															
M12-A, 4-pin														14	
M12-A, 5-pin														15	
DIN EN 175301-803 A (DIN 43650 A), 4-pin														44	
Cable outlet 1.5 m, 3-wire, shielded														53	
Connection head, cable gland IP67														54	



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Ordering key - Configuration possibilities see website

	PBMH	-	2	#	###	#	##	##	##	#	#	#	0	#	#
<b>Process connection</b>															
BHC 3A DN 38 (B01)															50
ISO 2852 (Tri-Clamp), DN 33.7; 38, Ø 50.5 (C04)															51
Tri-Clamp, DN 3/4, Ø 24.9 (ohne 3-A) (C01)															52
ISO 2852 (Tri-Clamp), DN 25, Ø 50.5 (C03)															53
ISO 2852 (Tri-Clamp), DN 40; 51, Ø 64.0 (C05)															54
BHC 3A DN 76 (B02)															56
ISO 2852 (Tri-Clamp), DN 21.3, Ø 34.0 (C02)															57
DIN 11864-3-A BKS (Aseptic Clamp), DN25, Ø 50.5 (H41)															58
Varivent® DN 32 ... 125; 1 1/2 ... 6 (Type N), Ø 68 (V02)															61
Varivent® DN 25; 1 (Type F), Ø 50 (V01)															62
BHC 3A DN 38, with cooling neck (B01)															80
ISO 2852 (Tri-Clamp), DN 33.7; 38, Ø 50.5 with cooling neck (C04)															81
DIN 32676-C (Tri-Clamp), DN 3/4, Ø 24.9 (without 3-A) with cooling neck (C01)															82
ISO 2852 (Tri-Clamp), DN 25, Ø 50.5 with cooling neck (C03)															83
ISO 2852 (Tri-Clamp), DN 40; 51, Ø 64.0 with cooling neck (C05)															84
BHC 3A DN 76, with cooling neck (B02)															86
ISO 2852 (Tri-Clamp), DN 21.3, Ø 34.0 with cooling neck (C02)															87
DIN 11864-3-A (Aseptic Clamp), DN25, Ø 50.5 with cooling neck (H41)															88
<b>Process connection material</b>															
Stainless steel 1.4404 AISI 316L															2
Stainless steel 1.4435 AISI 316L															5
Stainless steel AISI 316L, 1.4435 electropolished Ra 0.4															F
<b>Seal</b>															
None															0
EPDM															2
EPDM EHEDG															7
<b>Oil filling</b>															
Standard oil															1
NSF H1 listed (FDA approved)															2
<b>Display</b>															
Without display															0
<b>ATEX</b>															
Standard safety															0
ATEX according to SEV 11 ATEX 0129															1
<b>Approvals</b>															
Standard approvals															0
EAC															7

(1) EHEDG only with special gasket

(2) EHEDG not included

(3) EHEDG included