



XMP i

Precision Pressure Transmitter for the Process Industry with HART®-Communication and SIL2 (optionally)

Stainless Steel Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 400 mbar up to 0 ... 600 bar

Output signals

2-wire: 4 ... 20 mA
others on request

Special characteristics

- ▶ turn-down 1:10
- ▶ two chamber aluminium die cast case or stainless field housing
- ▶ internal or flush welded diaphragm
- ▶ HART®-communication
- ▶ explosion protection intrinsic safety (ia)





Optional versions

- ▶ explosion protection flameproof equipment (d)
- ▶ SIL2 - version according to IEC 61508 / IEC 61511
- ▶ integrated display and operating module
- ▶ special materials as Hastelloy® and Tantalum
- ▶ cooling element for media temperatures up to 300 °C

The process pressure transmitter XMP i has been especially designed for the process industry as well as food and pharmaceutical industry (version stainless steel field housing) and measures vacuum, gauge and absolute pressure ranges of gases, steam, fluids up to 600 bar.

Different process connections such as threads and flanges with an internal or flush welded diaphragm are available and can be combined with a cooling element for media temperatures up to 300 °C. The transmitter is as a standard equipped with HART®-communication; the customer can choose between a aluminium die cast case or a stainless field housing.

Preferred areas of use are

-   Oil and gas industry / chemical and petrochemical industry
-   Food / pharmaceutical industry

Material and test certificates

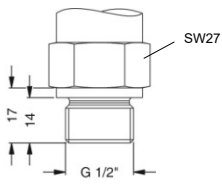
- ▶ material mill test report 3.1 according to EN 10204
- ▶ test report 2.2 according to EN 10204



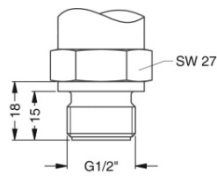
Pressure ranges ¹																		
Nominal pressure gauge / abs. ² [bar]	0.4	1	2	4	10	20	40	100	200	400	600							
Overpressure [bar]	2	5	10	20	40	80	105	210	600	1000	1000							
Burst pressure ≥ [bar]	3	7.5	15	25	50	120	210	420	1000	1250	1250							
¹ on customer request we adjust the devices within the turn-down-possibility by software to the required pressure ranges																		
² absolute pressure possible from 1 bar																		
Vacuum ranges																		
Nominal pressure gauge [bar]	-0.4 ... 0.4		-1 ... 1		-1 ... 2		-1 ... 4		-1 ... 10									
Overpressure [bar]	2		5		10		20		40									
Burst pressure ≥ [bar]	3		7.5		15		25		50									
Output signal / Supply																		
2-wire: 4 ... 20 mA with explosion protection	standard: intrinsic safety (ia) with HART®-communication options: flameproof equipment (d) with HART®-communication SIL2 / intrinsic safety (ia) with HART®-communication SIL2 / flameproof equipment (d) with HART®-communication								V _S = 12 ... 28 V _{DC} V _S = 13 ... 28 V _{DC} V _S = 12 ... 28 V _{DC} V _S = 13 ... 28 V _{DC}									
Current consumption	max. 25 mA																	
Performance																		
Accuracy ³ performance after turn-down (TD)	≤ ± 0.1 % FSO																	
- TD ≤ 1:5	no change of accuracy																	
- TD > 1:5	the accuracy is calculated as follows: ≤ 0.1 + 0.015 x (turn-down - 5) % FSO e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO																	
Permissible load	R _{max} = [(V _S - V _{S min}) / 0.02 A] Ω						load during HART® communication: R _{min} = 250 Ω											
Influence effects	supply: 0.05 % FSO / 10 V						permissible load: 0.05 % FSO / kΩ											
Long term stability	≤ ± 0.1 % FSO / year at reference conditions																	
Response time	100 msec – without consideration of electronic damping								measuring rate 10/sec									
Adjustability	electronic damping: 0 ... 100 sec				offset 0 ... 90 % FSO				turn-down of span up to 1:10									
³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)																		
Thermal errors / Permissible temperatures																		
Tolerance band ^{4,5}	≤ 0.2 % FSO x turn-down (in compensated range -20 ... 85 °C)																	
Permissible temperatures ⁶	medium: -40 ... 125 °C for filling fluid silicone oil -10 ... 125 °C for filling fluid food compatible oil						without display: environment: -40 ... 80 °C storage: -40 ... 80 °C with display: environment: -20 ... 70 °C storage: -30 ... 80 °C											
Permissible temperature medium for cooling element 300°C	filling fluid silicone oil			overpressure: -40 ... 300 °C			low pressure: -40 ... 150 °C			filling fluid food compatible oil			overpressure: -10 ... 250 °C			low pressure: -10 ... 150 °C		
⁴ an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions																		
⁵ for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO																		
⁶ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 60 minutes with a max. environmental temperature of 50 °C (without cooling element).																		
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	5 g RMS (25 ... 2000 Hz)				according to DIN EN 60068-2-6													
Shock	100 g / 11 msec				according to DIN EN 60068-2-27													
Filling fluids																		
Standard	silicone oil																	
Options for process connections	food compatible oil according to 21CFR178.3570 (Mobil SHC Cibus 32; Category Code: H1; NSF Registration No.: 141500) Halocarbon and others on request																	
Materials																		
Pressure port	stainless steel 1.4435 (316L)																	
Housing	aluminium die cast, powder-coated or stainless steel 1.4404 (316L)																	
Cable gland	brass, nickel plated																	
Viewing glass	laminated safety glass																	
Seals (media wetted)	thread: standard: FKM options: FFKM (min. permissible temperature from -15 °C, possible for nominal pressure ranges p _N ≤ 100 bar); others on request welded version for pressure ports EN 837 with p _N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery Clamp, Varivent®: none																	
Diaphragm	standard: stainless steel 1.4435 (316 L)				options for process connections: Hastelloy® C-276 (2.4819) tantalum (possible from 1 bar) on request													
Media wetted parts	pressure port, seal, diaphragm																	

Explosion protection		
Approvals AX12-XMP i AX2-XMP i (with SIL2)	intrinsic safety stainless steel field housing: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da safety technical maximum values: $U_i = 28 \text{ V}$, $I_i = 98 \text{ mA}$, $P_i = 680 \text{ mW}$, $C_i = 0 \text{ nF}$, $L_i = 0 \text{ }\mu\text{H}$, $C_{\text{GND}} = 27 \text{ nF}$	IBExU 05 ATEX 1106 X (with SIL2: IBExU 05 ATEX1105 X) aluminium die cast case: zone 0/1: II 1/2G Ex ia IIB T4 Ga/Gb zone 20: II 1D Ex ia IIIC T85 °C Da
Approvals AX17-XMP i AX7-XMP i (with SIL2)	flameproof enclosure with aluminium die cast case IBExU 12 ATEX 1045 X (with SIL2: IBExU 12 ATEX1073 X) zone 1: II 2G Ex db IIC T5 Gb	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar zone 1 or higher: intrinsic safety: -40 ... 70 °C / flameproof enclosure: -20 ... 70 °C	
Connecting cables (by factory)	capacitance: signal line/shield also signal line/signal line: 160 pF/m inductance: signal line/shield also signal line/signal line: 1 $\mu\text{H}/\text{m}$	
Options		
SIL2-version	according to IEC 61508 / IEC 61511	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ± 9999 ; 8-digit 14-segment additional display, digit height 5 mm; 52-segment bargraph; accuracy 0.1% ± 1 digit	
Miscellaneous		
Ingress protection	IP 67	
Installation position	any (standard calibration in a vertical position with the pressure port connection down; differing installation position have to be specified in the order)	
Weight	min. 400 g (depending on housing and mechanical connection)	
Operational life	100 million load cycles	
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 2014/68/EU (module A) ⁷	
ATEX Directive	2014/34/EU	
⁷ this directive is only valid for devices with maximum permissible overpressure > 200 bar		
Wiring diagram		
2-wire-system (current) and HART® - communication		
Pin configuration		
Electrical connections	aluminium die cast case: terminal clamps (clamp section: 2.5 mm ²)	stainless steel field housing: terminal clamps (clamp section: 1.5 mm ²)
Supply +	IN+	IN+
Supply -	IN-	IN-
Test	Test	-
Shield	⊕	⊕
Housing designs ⁸ (dimensions in mm)		
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>aluminium die cast case</p> </div> <div style="text-align: center;"> <p>stainless steel field housing</p> </div> </div>		
<p>* without display and operating module marked dimensions decrease by 22 mm (with aluminium case) ⇒ for nominal pressure $p_N > 400 \text{ bar}$ increases the length of devices by 39 mm</p>		
⁸ aluminium case is horizontally rotatable as standard		

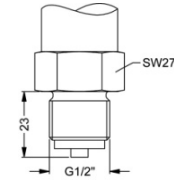
Standard pressure ports (dimensions in mm)



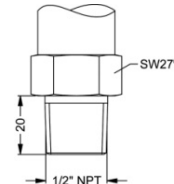
G 1/2" DIN 3852



G 1/2" flush (DIN 3852)
1 bar ≤ p_N ≤ 40 bar



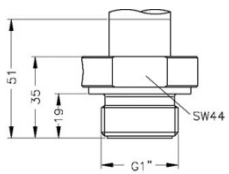
G 1/2" EN 837
M20x1.5



1/2" NPT

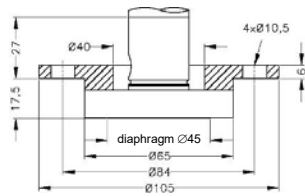
Process connections (dimensions in mm)

Inch thread (DIN 3852)



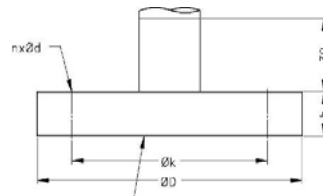
G 1" flush
p_N ≤ 400 bar

DRD⁹



p_N ≤ 25 bar

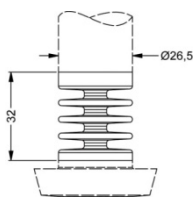
Flange (DIN 2501)



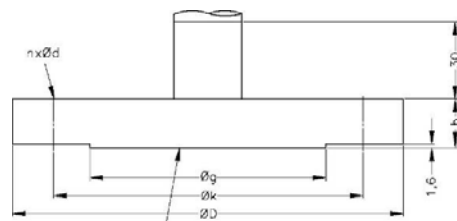
flush diaphragm ØE

dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
p _N [bar]	≤ 40	≤ 40	≤ 16

Cooling element 300° C



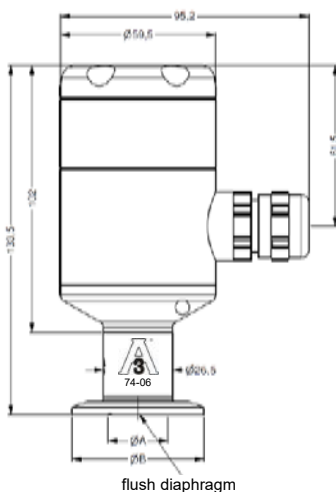
Flange (ANSI B16.5)



flush diaphragm ØE

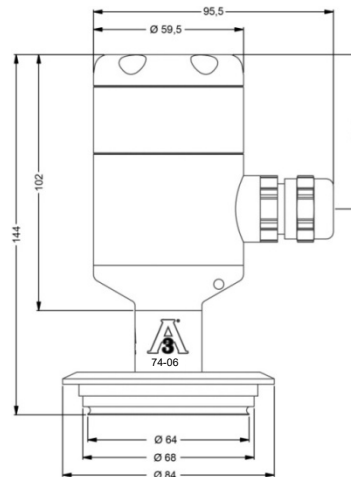
dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
E	86	89
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
p _N [bar]	≤ 10	≤ 10

Clamp (DIN 32676)



dimensions in mm				
size	3/4"	DN25	DN32	DN50
A	14	23	32	45
B	25	50.5	50.5	64
p _N [bar]	≥ 4 ≤ 8	≥ 0.25 ≤ 16	≤ 16	≤ 16

**Varivent® (DN 40/50)
p_N ≤ 25 bar**



⁹ mounting flange is included in the delivery (already pre-assembled)

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