

# 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
- ▶ IS-version:  
Ex ia = intrinsically safe for gases and dusts

### Optional versions

- ▶ IS-version:  
Ex d = flameproof enclosure
- ▶ 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

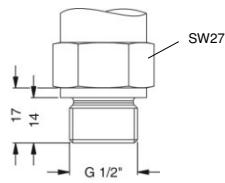
- ▶ material mill test report 3.1 according to EN 10204
- ▶ test report 2.2 according to EN 10204



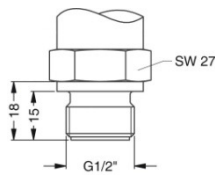
Pressure ranges <sup>1</sup>													
Nominal pressure gauge / abs. <sup>2</sup>	[bar]	0.4	1	2	4	10	20	40	100	200	400	600	
Overpressure	[bar]	2	5	10	20	40	80	105	210	600	1000	1000	
Burst pressure ≥	[bar]	3	7.5	15	25	50	120	210	420	1000	1250	1250	
<sup>1</sup> on customer request we adjust the devices within the turn-down-possibility by software to the required pressure ranges													
<sup>2</sup> 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													
Standard	2-wire: 4 ... 20 mA	IS-intrinsically safe version with HART®-communication								V <sub>S</sub> = 12 ... 28 V <sub>DC</sub>			
Option	2-wire: 4 ... 20 mA	IS version flameproof enclosure with HART®-communication								V <sub>S</sub> = 13 ... 28 V <sub>DC</sub>			
		IS-intrinsically safe version with HART®-communication and SIL2								V <sub>S</sub> = 12 ... 28 V <sub>DC</sub>			
		IS version flameproof enclosure with HART®-communication and SIL2								V <sub>S</sub> = 13 ... 28 V <sub>DC</sub>			
Current consumption		max. 25 mA											
Performance													
Accuracy <sup>3</sup>		≤ ± 0.1 % FSO											
performance after turn-down (TD)		no change of accuracy											
- TD ≤ 1:5		the accuracy is calculated as follows: ≤ 0.1 + 0.015 x (turn-down - 5) % FSO											
- TD > 1:5		e.g. turn-down 9: ≤ 0.1 + 0.015 x (9 - 5) % FSO = 0.16 % FSO											
Permissible load		R <sub>max</sub> = [(V <sub>S</sub> - V <sub>Smin</sub> ) / 0.02 A] Ω					load during HART® communication: R <sub>min</sub> = 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			
<sup>3</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)													
Thermal errors / Permissible temperatures													
Tolerance band <sup>4,5</sup>		≤ 0.2 % FSO x turn-down (in compensated range -20 ... 85 °C)											
Permissible temperatures <sup>6</sup>		medium:						without display:			environment: -40 ... 80 °C		
		-40 ... 125 °C for filling fluid silicone oil						storage: -40 ... 80 °C					
		-10 ... 125 °C for filling fluid food compatible oil						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			
<sup>4</sup> an optional cooling element can influence thermal effects for offset and span depending on installation position and filling conditions													
<sup>5</sup> for flange- and DRD-version: tolerance band offset ≤ ± 1.6 % FSO / tolerance band span ≤ ± 0.6 % FSO													
<sup>6</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 (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 <sub>N</sub> ≤ 100 bar); others on request welded version for pressure ports according to EN 837 with P <sub>N</sub> 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											



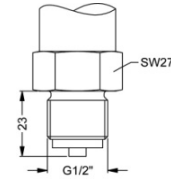
### Standard pressure ports (dimensions in mm)



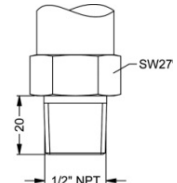
G1/2" DIN 3852



G1/2" flush (DIN 3852)  
1 bar ≤ P<sub>N</sub> ≤ 40 bar



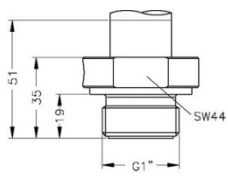
G1/2" EN 837  
M20x1.5



1/2" NPT

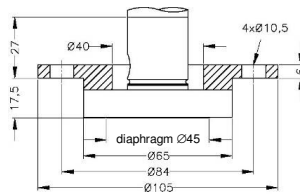
### Process connections up to 40 bar (dimensions in mm)

#### Inch thread (DIN 3852)



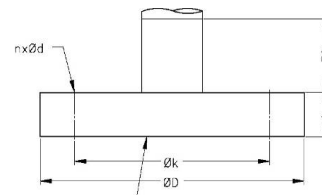
G1" flush  
(P<sub>N</sub> ≤ 400 bar)

#### DRD<sup>9</sup>



(P<sub>N</sub> ≤ 25 bar)

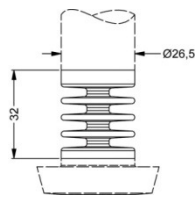
#### Flange (DIN 2501)



flush diaphragm ØE

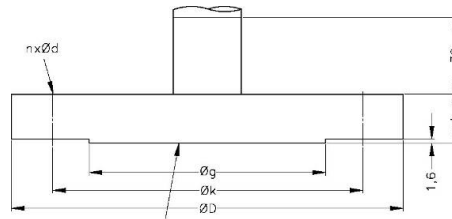
dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
P <sub>N</sub> [bar]	≤ 40	≤ 40	≤ 16

#### Cooling element



temperature range | 300° C

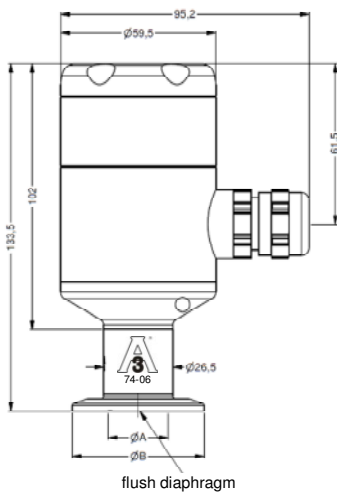
#### Flange (ANSI B16.5)



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 <sub>N</sub> [bar]	≤ 10	≤ 10

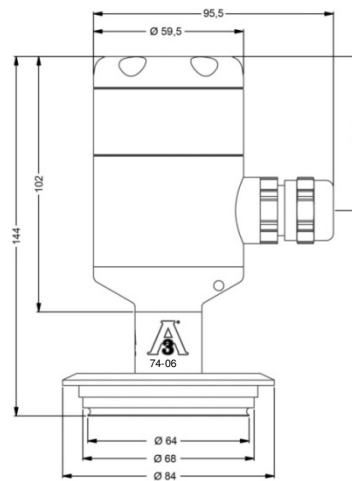
#### Clamp (DIN 32676)



flush diaphragm

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

#### Varivent® (DN 40/50) P<sub>N</sub> ≤ 25 bar



<sup>9</sup> mounting flange is included in the delivery (already pre-assembled)

HART® is a registered trade mark of HART Communication Foundation; Hastelloy® is a brand name of Haynes International Inc. Windows® is a registered trade mark of Microsoft Corporation

## Ordering code XMP i

XMP i		□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
<b>Pressure</b>																					
	gauge	5	1	1																	
	absolute <sup>1</sup>	5	1	2																	
<b>Input</b>																					
	[bar] <sup>Δ</sup>																				
	0 ... 0.4 <sup>1</sup>	4	0	0	0																
	0 ... 1	1	0	0	1																
	0 ... 2	2	0	0	1																
	0 ... 4	4	0	0	1																
	0 ... 10	1	0	0	2																
	0 ... 20	2	0	0	2																
	0 ... 40	4	0	0	2																
	0 ... 100	1	0	0	3																
	0 ... 200	2	0	0	3																
	0 ... 400	4	0	0	3																
	0 ... 600	6	0	0	3																
	-0.4 ... 0.4	S	4	0	0																
	-1 ... 1	S	1	0	2																
	-1 ... 2	V	2	0	2																
	-1 ... 4	V	4	0	2																
	-1 ... 10	V	1	0	3																
	customer	9	9	9	9																
<b>Design</b>																					
<b>Aluminium die cast case</b>																					
	with display																		A	0	
	without display																		A	N	
<b>Stainless steel field housing</b>																					
	with display																		F	V	
	without display																		F	N	
	customer																		9	9	
<b>Output</b>																					
	intrinsic safety 4 ... 20 mA / 2-wire with HART®-communication																		I		
	intrinsic safety Ex d 4 ... 20 mA / 2-wire (flameproof enclosure)																		G		
	with HART®-communication <sup>2</sup>																				
SIL2:	intrinsic safety 4 ... 20 mA / 2-wire with HART®-communication																		IS		
SIL2:	intrinsic safety Ex d 4 ... 20 mA / 2-wire (flameproof enclosure)																		GS		
	with HART®-communication <sup>2</sup>																				
	customer																		9		
<b>Accuracy</b>																					
	0.1 %																		1		
<b>Electrical connection</b>																					
	terminal clamp alu housing																		A	K	0
	terminal clamp field housing																		8	8	0
	customer																		9	9	9
<b>Mechanical connection</b>																					
<i>Standard pressure connections</i>																					
	G1/2" DIN 3852																		1	0	0
	G1/2" with flush <sup>3</sup>																		Z	0	0
	welded diaphragm (DIN 3852)																				
	G1/2" EN 837																		2	0	0
	1/2" NPT																		N	0	0
<i>Process connections (up to 40 bar)</i>																					
	G1" with flush welded diaphragm (DIN 3852)																		Z	3	1
	flange DN 25 / PN 40 (DIN 2501)																		F	2	0
	flange DN 50 / PN 40 (DIN 2501)																		F	2	3
	flange DN 80 / PN 16 (DIN 2501)																		F	1	4
	flange DN 2" / 150 lbs (ANSI B16.5) <sup>4</sup>																		F	3	2
	flange DN 3" / 150 lbs (ANSI B16.5) <sup>4</sup>																		F	3	3
	DRD Ø 65 mm <sup>5</sup>																		D	R	D
	Clamp DN 25 / 1" (DIN 32676) / 3A																		C	6	1
	Clamp DN 32 / 1 1/2" (DIN 32676) / 3A																		C	6	2
	Clamp DN 50 / 2" (DIN 32676) / 3A																		C	6	3
	Clamp 3/4" (DIN 32676) / 3A																		C	6	9
	Varivent® DN 40/50 / 3A																		P	4	1
<b>Diaphragm</b>																					
	stainless steel 1.4435 (316L)																		1		
	Hastelloy® <sup>6</sup>																		H		
	Tantalum <sup>6,7</sup>																		T		
<b>Seals</b>																					
<i>Inch thread:</i>																					
	FKM																		1		
	FFKM <sup>8</sup>																		7		
EN 837:	without (welded version) <sup>9</sup>																		2		
DRD, flange:	without																		0		
<b>Filling Fluids</b>																					
	silicone oil																		1		
	food compatible oil <sup>6</sup>																		2		
	Halocarbon <sup>6</sup>																		C		
	customer																		9		
<b>Special version</b>																					
	standard																		0	0	0
	with cooling element up to 300 °C <sup>6</sup>																		2	0	0
	special compensation -40 ... +60 °C <sup>10</sup>																		0	2	2

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<sup>Δ</sup> if setting range shall be different from nominal range please specify in your order

- <sup>1</sup> absolute pressure possible from 1 bar
- <sup>2</sup> only possible in combination with aluminium die cast case
- <sup>3</sup> only possible for P<sub>N</sub> ≥ 1 bar up to 40 bar
- <sup>4</sup> 2"/150 lbs and 3"/150 lbs possible for nominal pressure ranges P<sub>N</sub> ≤ 10 bar
- <sup>5</sup> mounting flange is included in the delivery (already pre-assembled)
- <sup>6</sup> only possible with process connections
- <sup>7</sup> tantal diaphragm possible with nominal pressure ranges from 1 bar
- <sup>8</sup> min. permissible temperature from -15 °C, possible for nominal pressure ranges P<sub>N</sub> ≤ 100 bar
- <sup>9</sup> possible with pressure ranges between 1 bar and 40 bar
- <sup>10</sup> option for version without display

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