



XMP i

Precision Pressure Transmitter for Process / Food Industry and Pharmacy

- ▶ piezoresistive stainless steel sensor
- ▶ diaphragm inside mounted or flush welded
- ▶ stainless steel field housing or aluminium die cast case
- ▶ option: integrated, multiline LC display
- ▶ option: HART® communication
- ▶ nominal pressure ranges from 0 ... 350 mbar up to 0 ... 600 bar


The precision pressure transmitter XMP i has been developed especially for highest requirements in process and food industry as well as pharmacy.

Basic element is a piezoresistive sensor which is characterised by high signal stability. The digital amplifier electronic linearises the sensor signal and compensates the thermal errors.

Sensor and electronics are mounted shock- and vibration-proof in a stainless steel field housing or in a shapely, powder-coated aluminium die cast case.

Several process connections starting with standard inch threads as well as diverse process connections are available. Standard pressure ports have diaphragm inside mounted; with process connections they are flush welded.

Talking about functionality BD SENSORS applies a high standard to the XMP series. The integrated LC display shows the actual value, the corresponding text info and the tendency (via bargraph). The user-friendly control software provides an easy menu handling and unproblematic configuration.

Characteristics	<ul style="list-style-type: none"> ▶ accuracy: 0.05 % FSO BFSL (0.10 % FSO IEC 60770) ▶ thermal error in compensated range -20 ... 80 °C: 0.1 % FSO / 10 K ▶ output signal 4 ... 20 mA / 2-wire, optional with HART® ▶ option Ex version, zone 0 (IBExU05 ATEX 1106 X) ▶ optional: configuration in situ via push buttons in the display module or by remote access via HART® communication 	XMP i Precision Pressure Transmitter
		

Input pressure range						
Nominal pressure gauge [bar]	-1 ... 1 ¹	-0.35 ... 0.35 ¹	0 ... 0.35	0 ... 1	0 ... 2	0 ... 7
Nominal pressure abs. ¹ [bar]	-	-	-	0 ... 1	0 ... 2	0 ... 7
Permissible overpressure [bar]	3	1	1	3	6	20
Nominal pressure gauge [bar]	0 ... 17	0 ... 35 ²	0 ... 70	0 ... 170	0 ... 350	0 ... 600
Nominal pressure abs. ¹ [bar]	0 ... 17	0 ... 35 ²	0 ... 70	0 ... 170	0 ... 350	0 ... 600
Permissible overpressure [bar]	60	100	140	340	600	1000

On customer request we adjust the devices by software on the standard pressure ranges, within the turn-down-possibility (gauge starting at 0.1 bar, abs. starting at 0.4 bar). Deviating pressure ranges are also possible on request.

Output signal / Supply	
Standard	2-wire: 4 ... 20 mA / $V_s = 10 \dots 30 V_{DC}$ Ex version: $V_s = 10 \dots 28 V_{DC}$
Option	2-wire: 4 ... 20 mA with HART [®] communication (option HART [®] communication is delivered in Ex version as standard)
	3-wire ³ : 0 ... 10 V / $V_s = 15 \dots 36 V_{DC}$

Performance	
Accuracy	IEC 60770 ⁴ : $\leq \pm 0.1$ % FSO BFSL: $\leq \pm 0.05$ % FSO relating to nominal range
Permissible load	$R_{max} = [(V_s - V_{s,min}) / 0,02] \Omega$ load during HART [®] communication: $R_{min} = 250 \Omega$
Influence effects	supply: 0,05 % FSO / 10 V permissible load: 0,05 % FSO / k Ω
Long term stability	$\leq \pm (0.1 \times \text{nominal range} / \text{adjusted range})$ % FSO / year
Response time	200 ms – without consideration of the electronical damping measuring rate 5/s
Adjustability	configuration of following parameters (via display module or HART [®] Interface) possible: - electronical damping: 0 ... 100 s - offset: 0 ... 80 % FSO - turn down of span: max. $1:10^2$ (lowest value gauge: 0.1 bar; lowest value abs.: 0.4 bar)

Thermal errors (Offset and Span)	
Thermal error in compensated range	$\leq \pm (0.1 \times \text{nominal range} / \text{adjusted range})$ % FSO / 10 K -20 ... 80 °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
Option Ex protection AX12-XMP i	stainless steel field housing: II 1 G EEx ia IIC T4 aluminium die cast case: II 1 G EEx ia IIB T4 safety technical maximum values: $V_i = 28 V$, $I_i = 93 mA$, $P_i = 660 mW$

Display	
Type	LC display, visible range 32.5 x 22.5 mm
Display for values	5-digit, 7-segment, digit size 8 mm, range of indication ± 9999
Additional display	8-digit, 14-segment, digit size 5 mm
Bargraph indication	52 segments (1 segment conforms approx. 2 % of set measuring range)
Accuracy	0.1 % \pm 1 digit

¹ for vacuum ranges and nominal pressure abs. the max. medium temperature is 70 °C

² limited turn-down-possibility of span with nominal pressure 35 bar: 1:2

³ in preparation

⁴ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) relating to nominal range

Mechanical stability

Vibration	10 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 ms

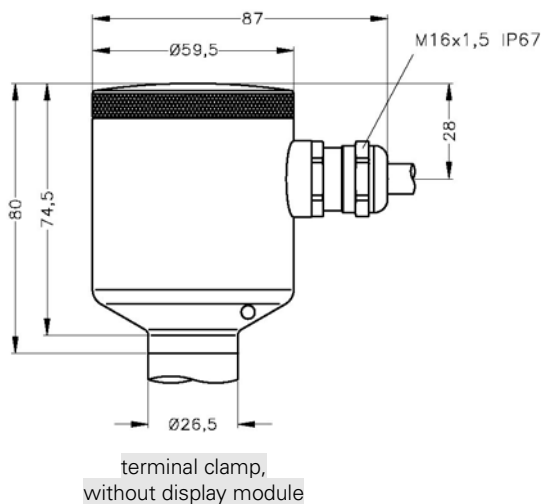
Permissible temperatures

Medium	-25 ... 125 °C ^{1,5}
Electronics / environment	-20 ... 70 °C
Storage	-30 ... 80 °C

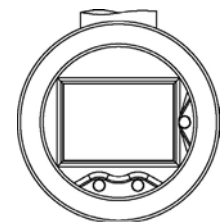
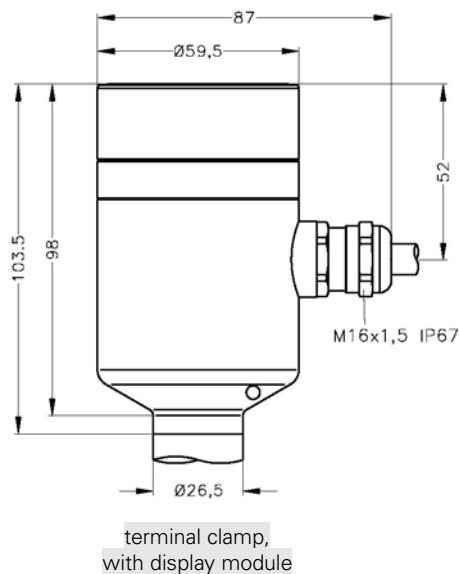
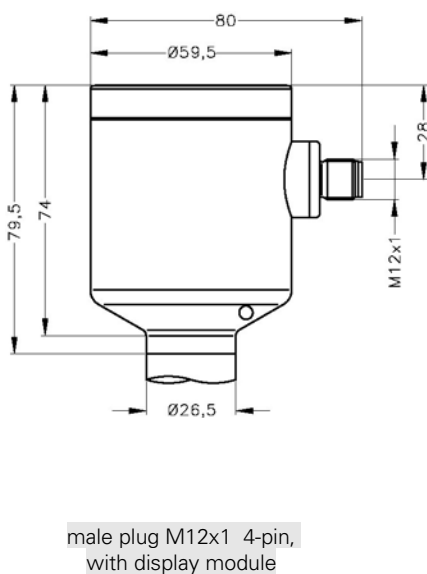
Housing types

Stainless steel field housing

standard



options



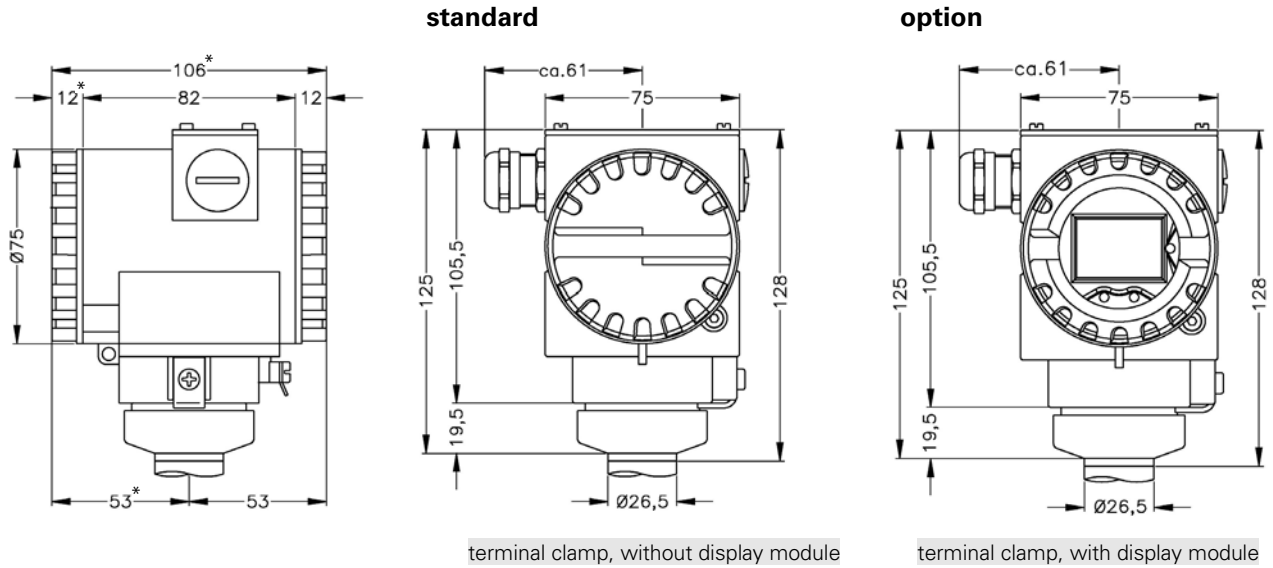
⁵ max. temperature of the medium for nominal pressure gauge > 0 bar: 150 °C for 30 minutes with a max. environmental temperature of 50 °C

XMP i

Precision Pressure Transmitter

Technical Data

Aluminium die cast case



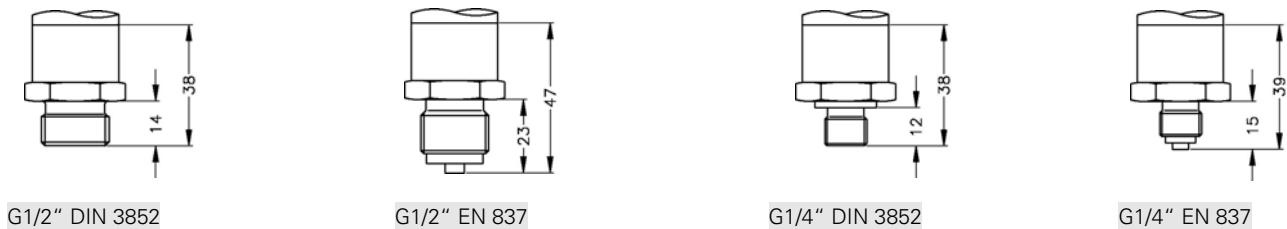
terminal clamp, without display module

terminal clamp, with display module

⇒ with optional display module the lengths marked with * increase by 19 mm

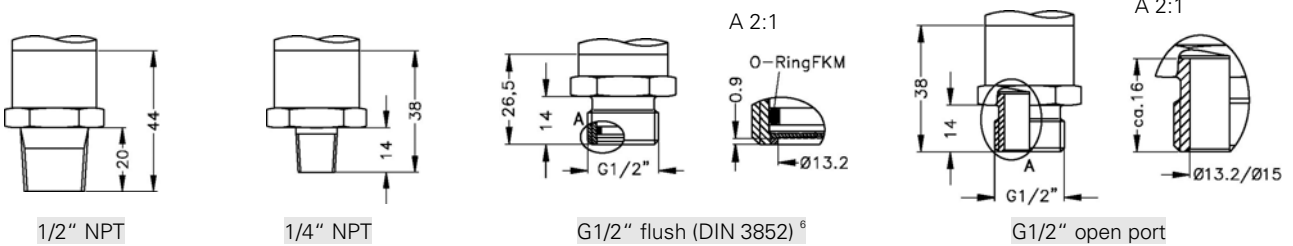
Mechanical connections

Standard pressure ports



⇒ with pressure ranges > 40 bar the length increases by 6 mm

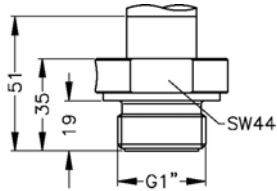
Optional for pressure ranges ≤ 40 bar:



⁶ not possible for nominal pressure ranges $P_N < 0,1$ bar and for vacuum pressure ranges

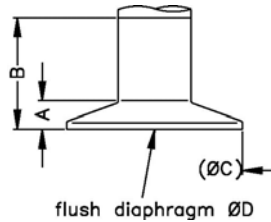
Process connections (up to 35 bar)

Inch thread



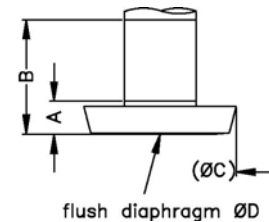
G1" flush
(DIN 3852)

Clamp



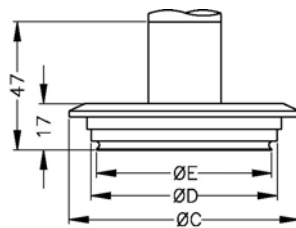
dimensions in mm			
size	1"	1 1/2"	2"
A	11	11	22
B	41	41	22
C	50,5	50,5	64
D	24	32	45

Dairy pipe ⁷



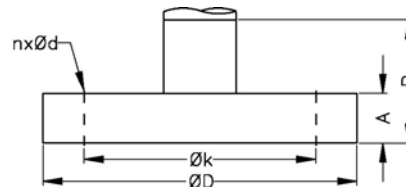
dimensions in mm			
size	DN 25	DN 40	DN 50
A	14	23	23,5
B	44	23	23,5
C	44	56	68,5
D	24	32	45

Varivent



dimensions in mm	
size	DN 40/50
C	84
D	68
E	64

Flange ⁸



dimensions in mm			
size	DN25/PN40	DN50/PN40	DN80/PN16
D	115	165	200
k	85	125	160
A	18	20	20
B	48	50	50
n	4	4	8
d	14	18	18

Electrical connection

Stainless steel field housing	<p>standard: terminal clamps in clamping chamber; cable gland M16x1.5 (IP 67) (Ø-range 5 ... 10 mm); clamp section: 1,5 mm²</p> <p>options: M12x1 4-pin; cable outlet ⁹ (cable with air tube) cable capacitance: signal line/shield: 150 pF/m signal line/signal line: 100 pF/m cable inductance: signal line/shield: 1.0 µH/m signal line/signal line: 1.0 µH/m</p>
Aluminium die cast case	<p>terminal clamps in clamping chamber; cable gland M16x1.5 (IP 67) (Ø-range 5 ... 10 mm); clamp section: 2,5 mm²</p>

⁷ cup nut for dairy pipe is included in the delivery (already pre-assembled)

⁸ DN80/PN16 possible for nominal pressure ranges up to 16 bar

⁹ in preparation

Filling fluids

Standard	silicon oil
Options	food compatible oil (with FDA approval) / Halocarbon / others on request

Materials

Pressure port	process connections: stainless steel 1.4435 (316 L) standard pressure port: stainless steel 1.4571 (316 Ti)
Housing	stainless steel 1.4301 (304) / aluminium die cast, powder-coated
Viewing glass	laminated safety glass
Seals (media wetted)	clamp, dairy pipe, varivent, flange: none inch thread with $P_N \leq 40$ bar: FKM / EPDM inch thread with $P_N > 40$ bar: NBR option: welded version (only with pressure ports according to EN 837 and with pressure ranges P_N between 0,17 and 25 bar) others on request; delivery of process seals on request
Diaphragm	standard: stainless steel 1.4435 (316L) optional for process connections: Hastelloy others on request
Media wetted parts	pressure port, seals, diaphragm

Miscellaneous

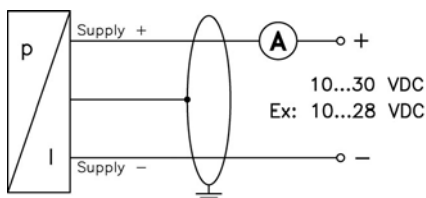
Current consumption	max. 25 mA
Ingress protection	IP 67
Weight	min. 400 g (depending on housing and mechanical connection)
Installation position	any ¹⁰
Operational life	> 100 x 10 ⁶ pressure cycles

Pin configuration

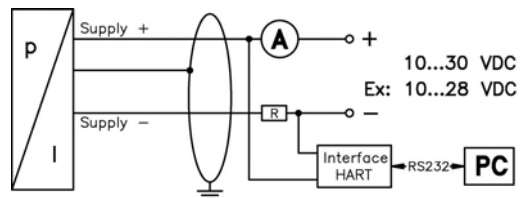
Electrical connection		stainless steel field housing			aluminium die cast case
		terminal clamp	M12x1 (4-pin)	cable colours (DIN 47100)	terminal clamp
2-wire-system	Supply +	1	1	white	2
	Supply -	2	3	brown	4
	Test ¹¹	-	-	-	3
	Ground	6	plug housing	cable shield	1

Wiring diagram

2-wire-system (current)



2-wire-system (current) HART®



¹⁰ Pressure transmitters are calibrated in a vertical position with the pressure port connection down. If this position is changed on installation there can be slight deviations in the zero point for pressure ranges ≤ 1 bar. Therefore installation position should be specified.

¹¹ by connecting the terminals Supply + and Test, the output signal can be measured **without** disconnecting the power supply