BD|SENSORS
pressure measurement

XMP ci

Process Pressure Transmitter with HART®-communication

Ceramic Sensor

accuracy according to IEC 60770:
0.1 % FSO

Nominal pressure

from 0 ... 160 mbar up to 0... 20 bar

Output signals

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

Special characteristics

- turn-down 1:5
- two chamber aluminium die cast case or stainless field housing
- internal or flush mounted capacitive ceramic sensor
- HART®-communication
- IS-version:
  Ex ia = intrinsically safe version
- diaphragm Al_2O_3 99.9 %

Optional versions

- IS-version: Ex d = flameproof enclosure
- with integrated display and operating module
- several process connections (thread, flange, DRD etc.)

The process pressure transmitter XMP ci measures the pressure of gases, steam and fluids. The special-developed capacitive ceramic sensor for this transmitter has a high overpressure capability and excellent media stability.

Several process connections e.g. thread or flange are available. The transmitter is as a standard equipped with HART®-communication, the customer can choose between a two chamber aluminum die cast case or a stainless field housing.

Preferred areas of use are

- Oil and gas industry
- Chemical and petrochemical industry

Preferred using in

- Fuel and Oil
- aggressive Media

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Pressure ranges [1]								
Nominal pressure gauge	[bar]	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	4	6	8	15	25	35	45
Permissible vacuum	[bar]	-0.3	-0.5		-1			
[1] On customer request we adjust the devices by software to the required pressure ranges. Within the turn-down-possibility (starting at 0.02 bar).								

Output signal / Supply		
Standard 2-wire: 4 ... 20 mA	intrinsically safe version with HART®-communication	V_S = 12 ... 28 V_{DC}
Option 2-wire: 4 ... 20 mA	IS version flameproof enclosure with HART®-communication	V_S = 13 … 28 V_{DC}
Current consumption	max. 25 mA	

Performance		
Accuracy [2]	nominal pressure < 1 bar: ≤ ± 0.2 % FSO nominal pressure ≥ 1 bar: ≤ ± 0.1 % FSO	
	for nominal pressure ranges: from 0.16 bar up to 0.4 bar	≤ ± (0.2 + (TD-1) x 0.02) % FSO
	for nominal pressure ranges: from 1 bar up to 20 bar	≤ ± (0.1 + (TD-1) x 0.01) % FSO
	with turn-down = nominal pressure range / adjusted range	
Permissible load	$R_{max} \leq [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$	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	200 msec – without consideration of electronic damping	measuring rate 5/sec
Adjustability	electronic damping: 0 … 100 sec offset 0 ... 80 % FSO turn-down of span: max. 1:5 (span min. 0.02 bar)	
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)		

Thermal errors / Permissible temperatures		
Thermal error	≤ ± (0.02 x turn-down) % FSO / 10 K in compensated range -20 … 80 °C	
Permissible temperatures [3]	without display: medium: -25 ... 125 °C	environment: -40 ... 70 °C storage: -40 ... 80° C
	with display: medium: -25 ... 125 °C	environment: -20 ... 70 °C storage: -30 ... 80° C
[3] for pressure port of PVDF the minimum permissible temperature is -30°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

Mechanical stability	
Vibration	5 g RMS (20 ... 2000 Hz)
Shock	100 g / 11 msec

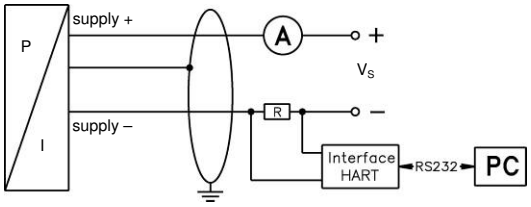
Materials	
Pressure port Standard Optionally for G1 1/2" flush	 stainless steel 1.4404 (316L) PVDF
Housing	aluminium die cast, powder-coated or stainless steel 1.4404 (316L)
Cable gland	brass, nickel plated
Viewing glass	laminated safety glass
Seals (media wetted)	FKM (permissible temperature: -25 ... 125 °C) EPDM (permissible temperature: -40 ... 125 °C) others on request
Diaphragm	ceramics Al_2O_3 99.9 %
Media wetted parts	pressure port, seal, diaphragm

Explosion protection		
Approval AX12-XMP ci (intrinsically safe version) **IBExU 05 ATEX 1106 X**	stainless steel field housing zone 0/1 [4]: II 1G Ex ia IIC T4 Ga II 1/2G Ex ia IIC T4 Ga/Gb II 2G Ex ia IIC T4 Gb	aluminium die cast case zone 1 [5]: II 1/2G Ex ia IIB T4 Ga/Gb II 2G Ex ia IIB T4 Gb
	zone 20: II 1D Ex ia IIIC T85 °C Da	
Safety techn. maximum values	U_i = 28 V, I_i = 98 mA, P_i = 680 mW, C_i = 0 nF, L_i = 0 µH, C_{GND} = 27 nF	
Approval AX17-XMP ci (flameproof enclosure)	**IBExU 12 ATEX 1045 X** aluminium die cast case: zone 1: II 2G Ex d IIC T5 Gb	
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar in zone 1 or higher: -40 ... 70° C (intrinsically safe version); -20 ... 70 °C (flameproof enclosure)	

[4] The designation depends on the nominal pressure range. Nominal pressure ranges ≤160 mbar are marked with „2G“. Nominal pressure ranges > 160 mbar and ≤10 bar are marked with „1/2G“. Nominal pressure ranges > 10 bar are marked with „1G“.
[5] The designation depends on the nominal pressure range. Nominal pressure ranges < 160 mbar are marked with „2G“. Nominal pressure ranges ≥ 160 mbar are marked with „1/2G“.

Miscellaneous	
Display (optionally)	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-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight	min. 400 g (depending on housing and mechanical connection)
Operational life	> 100 x 10^6 pressure cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

Wiring diagram

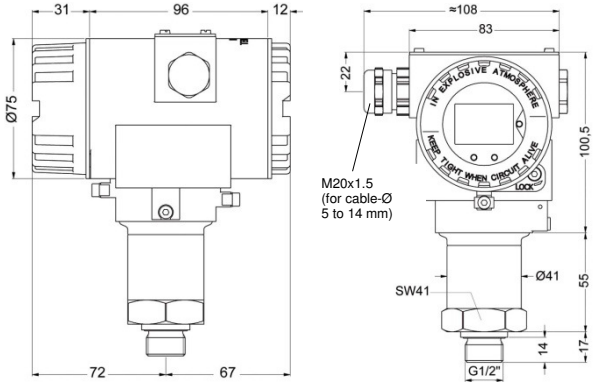


Pin configuration

Electrical connections	**aluminium die cast case:** terminal clamps (clamp section: 2.5 mm²)	**stainless steel field housing:** terminal clamps (clamp section: 1.5 mm²)
Supply + Supply – Test	IN+ IN- Test	IN+ IN- -
Shield	⏚	⏚

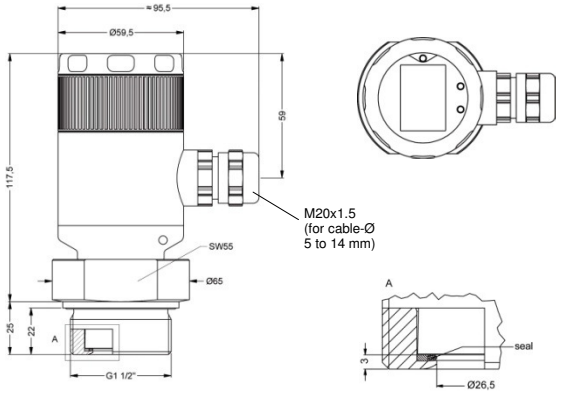
Housing designs [6] (dimensions in mm)

aluminium die cast case with display



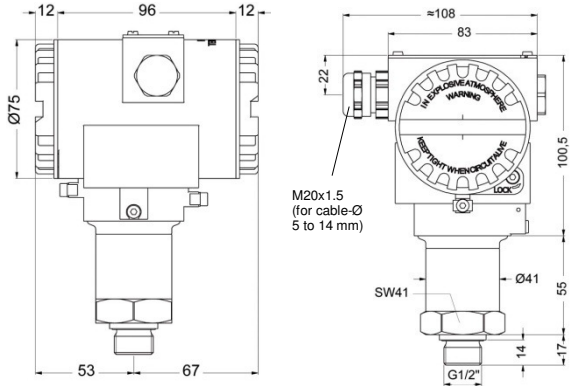
G1/2" DIN 3852

stainless steel field housing with display



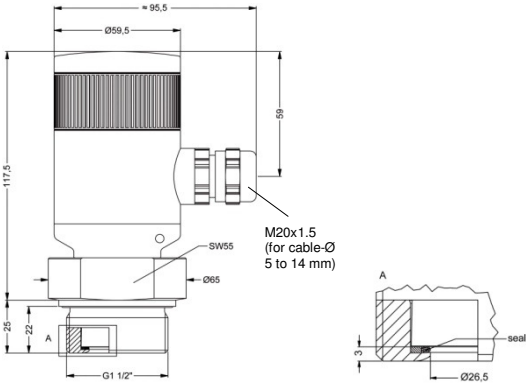
G1 1/2" flush DIN 3852

aluminium die cast case without display



G1/2" DIN 3852

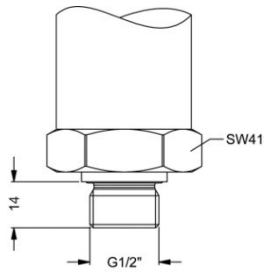
stainless steel field housing without display



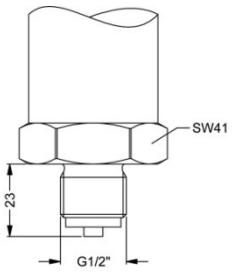
G1 1/2" flush DIN 3852

[6] *aluminium die cast case is horizontally rotatable as standard*

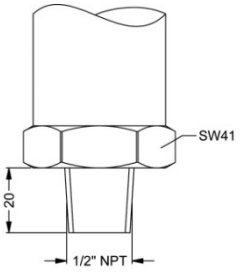
Standard pressure ports (dimensions in mm)



G1/2" DIN 3852



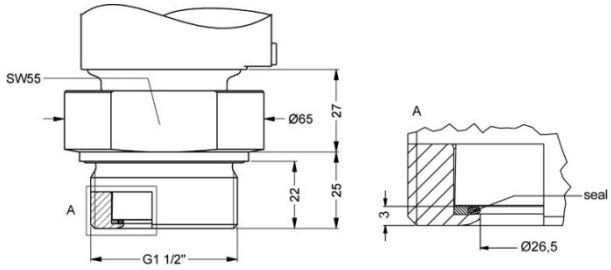
G1/2" EN 837



1/2" NPT

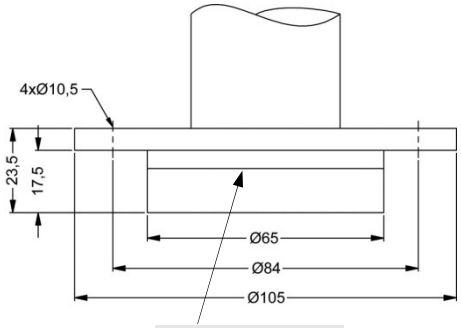
Process connections (dimensions in mm)

Inch thread



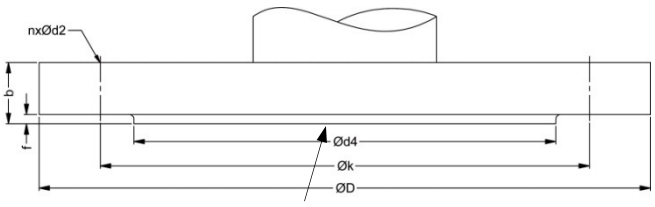
G1 1/2" flush DIN 3852

DRD [7]



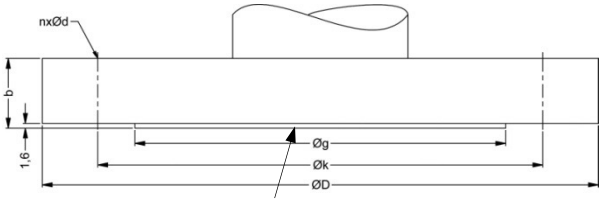
flush diaphragm Ø26,5

Flange (DIN 2501)



flush diaphragm Ø26,5

Flange (ANSI)



flush diaphragm Ø26,5

dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
k	85	125	160
d4	68	102	138
b	18	20	20
f	2	3	3
n	4	4	8
d2	14	18	18
P_N	≤ 40 bar	≤ 40 bar	≤ 16 bar

dimensions in mm		
size	2"/150 lbs	3"/150 lbs
D	152.4	190.5
g	91.9	127
k	120.7	152.4
b	19.1	23.9
n	4	4
d	19.1	19.1
P_N	≤ 10 bar	≤ 10 bar

[7] mounting flange is included in the delivery (already pre-assembled)
HART® is a registered trade mark of HART Communication Foundation;
Windows® is a registered trade mark of Microsoft Corporation

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BD|SENSORS pressure measurement

Ordering code XMP ci

XMP ci ☐☐☐-☐☐☐☐-☐☐-☐-☐-☐☐☐-☐☐☐-☐-☐-☐-☐☐☐

Pressure											
gauge	5 1 E										
Input [bar] ⚠											
0.16		1 6 0 0									
0.4		4 0 0 0									
1		1 0 0 1									
2		2 0 0 1									
5		5 0 0 1									
10		1 0 0 2									
20		2 0 0 2									
customer		9 9 9 9									consult
Design											
Aluminium die cast case											
with display			A 0								
without display			A N								
Stainless steel field housing											
with display			F V								
without display			F N								
customer			9 9								consult
Output											
Intrinsic safety 4 … 20 mA / 2-wire with HART®-communication				I							
Intrinsic safety d 4 … 20 mA / 2-wire (flameproof enclosure) with HART®-communication [1]				G							
customer				9							consult
Accuracy											
P_N < 1 bar: 0.2 %					B						
P_N ≥ 1 bar: 0.1 %					1						
customer					9						consult
Electrical connection											
terminal clamp alu housing						A K 0					
terminal clamp field housing						8 8 0					
customer						9 9 9					consult
Mechanical connection											
standard pressure connections:											
G1/2" DIN 3852							1 0 0				
G1/2" EN 837							2 0 0				
1/2" NPT							N 0 0				
process connections:											
G 1 1/2" DIN flush (DIN 3852)							M 0 0				
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				
Flansch DN 2" / 150 lbs (ANSI B16.5) [2]							F 3 2				
Flansch DN 3" / 150 lbs (ANSI B16.5) [2]							F 3 3				
DRD Ø 65 mm [3]							D R D				
customer							9 9 9				consult
Diaphragm											
Ceramics Al_2O_3 99,9%								C			
customer								9			consult
Seals											
FKM [4]									1		
EPDM [4]									3		
customer									9		consult
Pressure port											
standard:											
Stainless steel 1.4404 (316L)										1	
option for G 1 1/2" flush:											
PVDF [4]										B	
customer										9	consult
Special version											
standard											0 0 0
customer											9 9 9 consult

⚠ **if setting range shall be different from nominal range please specify in your order**

[1] only possible in combination with aluminium die cast case
[2] 2"/150 lbs and 3"/150 lbs only possible for nominal pressure ranges PN ≤ 10 bar
[3] mounting flange is included in the delivery (already pre-assembled)
[4] permissible temperature FKM -25 … 125 °C, EPDM -40 … 125 °C, PVDF -30 … 125 °C
HART® is a registered trade mark of HART Communication Foundation; Varivent® is a brand name of GEA Tuchenhagen GmbH

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