



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)
- ▶ SIL 2 according to IEC 61508
- ▶ 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 two chamber 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

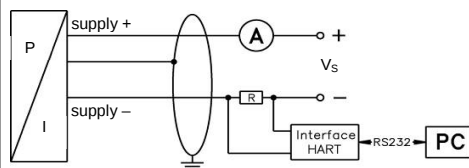


Pressure ranges ¹													
Nominal pressure gauge / abs. ²	[bar]	0.4	1	2	4	10	20	40	100	200	400	600	
Overpressure	[bar]	2	5	10	20	40	80	105	210	600	1000	1000	
Burst pressure ≥	[bar]	3	7,5	15	25	50	120	210	420	1000	1250	1250	
¹ On customer request we adjust the devices within the turn-down-possibility 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		standard: intrinsic safety (ia) with HART®-communication								V _S = 12 ... 28 V _{DC}			
With explosion protection		options: flameproof equipment (d) with HART®-communication SIL2 / intrinsic safety (ia) with HART®-communication SIL2 / flameproof equipment (d) with HART®-communication								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		≤ ± 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 _{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 silicon 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 silicon 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		silicon oil											
Options for process connections		food compatible oil with 21CFR178.3570 approval (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 option: FFKM (min. permissible temperature from -15 °C, possible for nominal pressure ranges P _N ≤ 100 bar); others on request option: welded version for pressure ports according to EN 837 with P _N between 1 and 40 bar DRD and flange: none, not included in the scope of delivery											
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 AX2-XMP i AX2-XMP I (with SIL2)	Intrinsic safety IBExU05 ATEX1106 X (with SIL2: IBExU 05 ATEX1105 X)	
	stainless steel field housing: zone 0: II 1G Ex ia IIC T4 Ga zone 20: II 1D Ex ia IIIC T85 °C Da	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
Safety technical 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	
Approvals AX7-XMP i/AX7- XMP I (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: -40 ... 70 °C (intrinsically safe version); -20 ... 70 °C (flameproof enclosure)	
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 µH/m	
Miscellaneous		
Option SIL 2 version	according to IEC 61508	
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 (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 x 10 ⁶ pressure 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

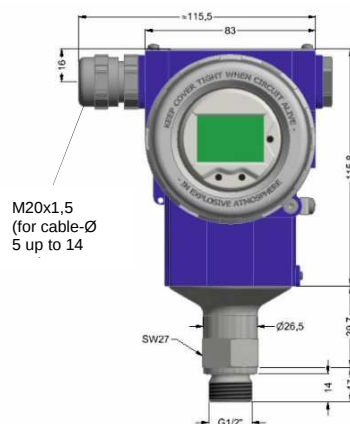
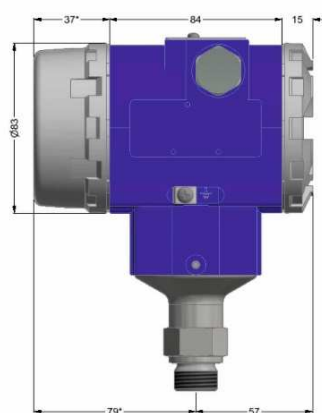


Pin configuration

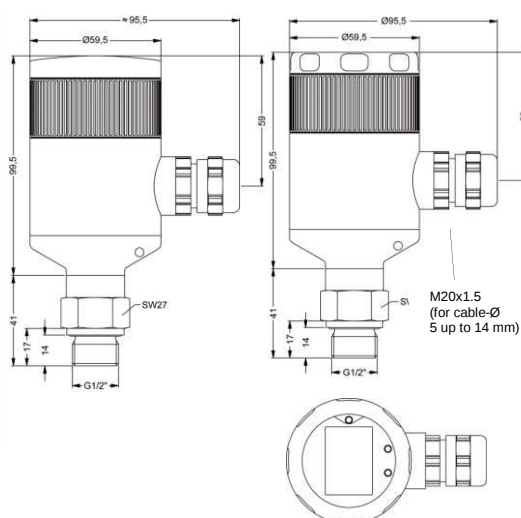
Electrical connections	aluminium die cast case: terminal clamps (clamp section: 2.5 mm ²)	stainless steel field housing: terminal clamps (clamp section: 1.5 mm ²)
Supply +	IN+	IN+
Supply -	IN-	IN-
Test	Test	-
Shield		

Housing designs ⁸ (dimensions in mm)

aluminium die cast case with display



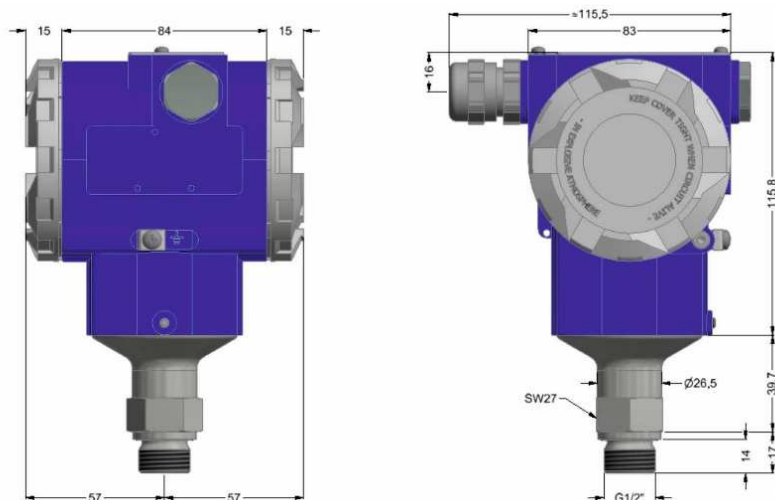
stainless steel field housing



⁸ aluminium case is horizontally rotatable as standard

Housing designs ⁸ (dimensions in mm)

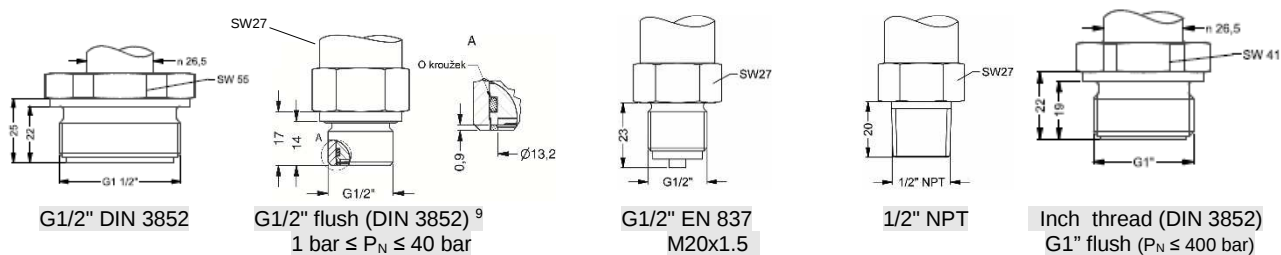
aluminium die cast case without display



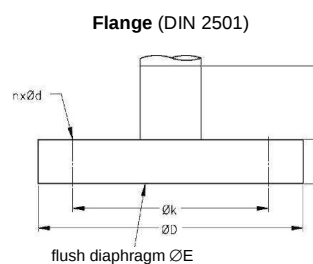
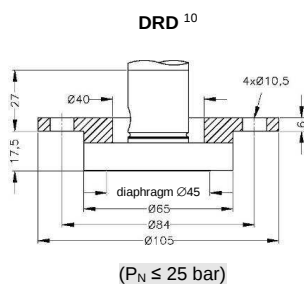
⇒ for nominal pressure $P_N > 400$ bar increases the length of devices by 3 mm

⁸aluminium case is horizontally rotatable as standard

Standard pressure ports (dimensions in mm)

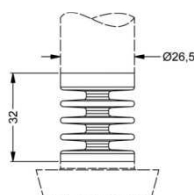


Process connections for low pressure- max. to 40 bar (dimensions in mm)



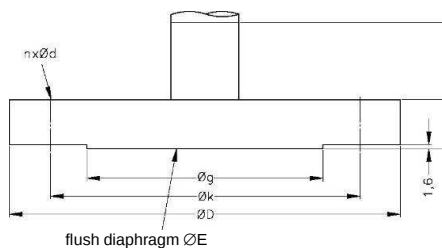
dimensions in mm			
size	DN25	DN50	DN80
D	115	165	200
E	30	89	89
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
PN [bar]	≤ 40	≤ 40	≤ 16

Cooling element

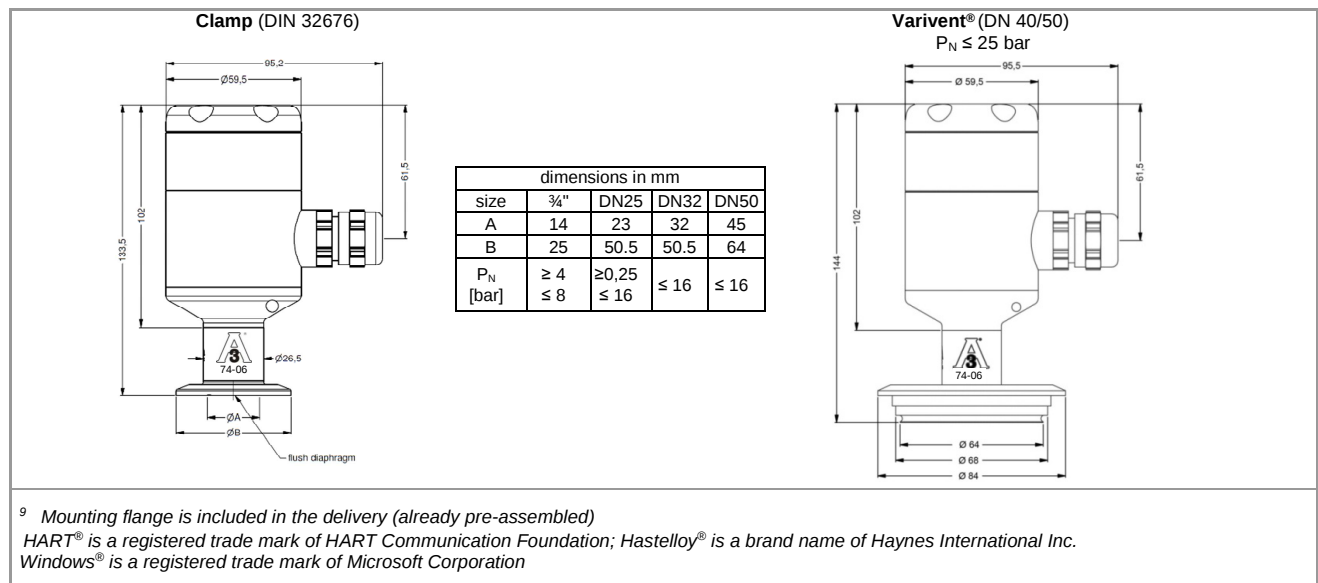


temperature range	300° C
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Flange (ANSI B16.5)



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
PN [har]	≤ 10	≤ 10



Accessories for aluminium cast (not a part of delivery)

Electrical connection Ex i (standard)		Electrical connection Ex d (flameproof enclosure)	
Ordering type	Ordering code	Ordering type	Ordering code
plug thread M20x1.5	1001871	plug thread M20x1.5	1001438
cable gland thread M20x1,5	1001460	cable gland thread M20x1,5	1001870

Ordering code XMP i

3.4.2020

XMP i

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Pressure																			
Gauge	5	1	1																
Absolute	5	1	2																
Input [bar]																			
0 ... 0,4 bar				4	0	0	0												
0 ... 1,0 bar				1	0	0	1												
0 ... 2,0 bar				2	0	0	1												
0 ... 4,0 bar				4	0	0	1												
0 ... 10 bar				1	0	0	2												
0 ... 20 bar				2	0	0	2												
0 ... 40 bar				4	0	0	2												
0 ... 100 bar				1	0	0	3												
0 ... 200 bar				2	0	0	3												
0 ... 400 bar				4	0	0	3												
0 ... 600 bar				6	0	0	3												
-0,4 ... 0,4 bar				S	4	0	0												
-1 ... 1 bar				S	1	0	2												
-1 ... 2 bar				V	2	0	2												
-1 ... 4 bar				V	4	0	2												
-1 ... 10 bar				V	1	0	3												
Customer	9	9	9	9															
Design																			
Aluminium housing - with display (IP 67)								A	0										
Aluminium housing - without display (IP 67)								A	N										
Stainless steel field housing - with display (IP 67)								F	V										
Stainless steel field housing - without display (IP 67)								F	N										
Output																			
HART® - 4 ... 20 mA / 2-wire										H									
HART® - Intrinsic safety Ex ia 4 ... 20 mA / 2-wire										I									
HART® - Flameproof equipment Ex d 4 ... 20 mA / 2-wire (only with A0, AN)										G									
SIL2, HART® - 4 ... 20 mA / 2-wire										HS									
SIL2, HART® - Intrinsic safety 4 ... 20 mA / 2-wire										IS									
SIL2, HART® - Flameproof equipment 4 ... 20 mA / 2-wire (only with A0, AN)										GS									
Customer										9									
Accuracy																			
0,1 % - standard range										1									
0,1 % - standard range including Calibration Certificate										P									
0,1 % - customer range										I									
0,1 % - customer range including Calibration Certificate										H									
Customer										9									
Electrical connection																			
Terminal clamp - Aluminium housing										A	K	0							
Terminal clamp - Stainless Steel field housing										8	8	0							
Customer										9	9	9							
Mechanical connection																			
G 1/2" DIN 3852											1	0	0						
G 1/2" EN 837											2	0	0						
G 1/4" DIN 3852											3	0	0						
M 20 x 1,5 DIN 3852											5	0	0						
M 20 x 1,5 EN 837											8	0	0						
1/2" NPT											N	0	0						
G 1/2" DIN 3852 - open port											H	0	0						
G 1/2" DIN 3852 flush (P _N > 2,5 bar) (only with seals)											Z	0	0						
M 20 x 1,5 DIN 3852 flush (P _N > 2,5 bar) (only with seals)											D	0	4						
G 3/4" DIN 3852 flush (P _N > 0,6 bar) (only with seals)											Z	3	0						
G 1" DIN 3852 flush (P _N > 0,25 bar) (only with seals)											Z	3	1						
G 1 1/2" DIN 3852 flush (only with seals)											Z	3	3						
G 2" DIN 3852 flush											Z	3	4						
G 1" DIN 3852 flush 2x O ring (P _N > 0,25 bar)											Z	5	7						
G 1/2" DIN 3852 flush 2x O ring (P _N > 1 bar)											Z	6	1						
G1" flush cone seal (P _N > 0,25 bar) (without seals)											K	3	1						
1/8" NPT (without seals, monel pressure port, tantal membrane)											Z	9	2						
1" NPT flush (P _N > 0,25 bar)											N	5	4						
Clamp DN 1" (DN 25) (P _N > 0,6 bar) (without seals)											C	6	1						
Clamp DN 1 1/2" (DN 32) (P _N > 0,4 bar) (without seals)											C	6	2						
Clamp DN 2" (DN 50) (P _N > 0,25 bar) (without seals)											C	6	3						
DIN 11851 DN 25 (P _N > 0,6 bar) (without seals)											M	7	3						
DIN 11851 DN 40 (P _N > 0,4 bar) (without seals)											M	7	5						
DIN 11851 DN 50 (P _N > 0,25 bar) (without seals)											M	7	6						
"sandwich" DN 25 (without seals)											S	6	1						



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The company BD SENSORS s.r.o. is certified by TÜV SÜD Czech according to the standard ISO 9001.

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"sandwich" DN 50 (without seals)	S	7	6						
"sandwich" DIN 2501 DN 80 (without seals)	S	8	0						
M 22 x 1,5 DIN 3852 flush (P _N > 2,5 bar) (only with seals)	D	1	5						
Flange DN 25/PN40 DIN 2501 (without seals)	F	2	0						
Flange DN 40/PN40 DIN 2501 (without seals)	F	2	2						
Flange DN 50/PN40 DIN 2501 (without seals)	F	2	3						
Flange DN 80/PN16 DIN 2501 (without seals)	F	1	4						
Flange DN 100/PN16 DIN 2501 (without seals)	F	2	5						
Varivent® DN 40/50 (without seals)	P	4	1						
Customer	9	9	9						
Diaphragm									
Stainless steel 1.4435 (316 L)				1					
Hastelloy ® C-276 (2.4819)				H					
Tantalum				T					
Customer				9					
Seals (included only in thread type connections)									
Without seals (Clamp, dairy pipe DIN, sandwich, flange, varivent)				0					
Viton (FKM)				1					
EPDM				3					
FFKM (for media temperature ≤ 200 °C)				7					
Customer				9					
Filling Fluids									
Silicone oil				1					
Food compatible oil (temperature max. 150°C)				2					
Halocarbon				C					
Customer				9					
Special version									
Standard					0	0	0		
With cooling element from 125°C up to 150°C					1	5	0		
With cooling element from 150°C up to 300°C (P _N ≤ 70 bar max. 200°C permanent)					2	0	0		
Customer					9	9	9		

3.1 Material Certificate for Membrane and Mechanical Connection
Settings in temperature different from basic 20°C (+/- 10°C, max. 70 bar and 200°C)

Diaphragm Seal	
The price of the mechanical connection from above	
Capillary tube (price for 1m)	
Flange with integral extended diaphragm	
The price of the mechanical connection form above	
Extension length up to 100 mm	
Extension length between 100 - 200 mm	
Accessories for Aluminium housing	
Electrical connection Ex ia (standard)	
Blind flange Ex ia (M20x1,5 thread)	1001871
Cable gland Ex ia (M20x1,5 thread)	1001460
Electrical connection Ex D (standard)	
Blind flange Ex D (M20x1,5 thread)	1001438
Cable gland Ex D (M20x1,5 thread)	1001870
Mounting Bracket	
Universal holder (for pipes $\varnothing \leq 26,5$ mm)	5020043

0,-...without additional charge
On request...in accordance with the producer

!!! When you make an order it is necessary to fill the questionnaire for transmitters with separators!!!
Surcharges for calibration are not subject to any discounts. Subject to change.☐
This document contains the specification for ordering the product; detailed technical parameters of the product and its possible variants are given in the data sheet.
BD SENSORS reserves the right to change sensor specifications without further notice.

