

# x | act ci

## Precision Pressure Transmitter for Food / Beverage, Pharmaceutical Industry and Biotechnology

Ceramic Sensor

accuracy according to IEC 60770:  
0.1 % FSO



### Nominal pressure

from 0 ... 60 mbar up to 0... 20 bar

### Output signals

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

### Special characteristics

- ▶ Turn-Down 1:5
- ▶ hygienic version
- ▶ flush mounted capacitive ceramic sensor
- ▶ several process connection (inch thread, Clamp, etc.)
- ▶ with integrated display and operating module
- ▶ diaphragm Al<sub>2</sub>O<sub>3</sub> 99.9 %

### Optional versions

- ▶ explosion protection intrinsic safety (ia)
- ▶ HART®-communication

The precise pressure transmitter x|act ci measures the pressure of gases, steam and fluids. The special-developed capacitive ceramic sensor for this transmitter, which can optionally be delivered in pure ceramic, has a high overpressure capability and excellent media stability.

Several process connections e.g. inch thread or hygienic versions like Varivent®, dairy pipe or Clamp are available. The robust stainless steel globe housing has a high ingress protection IP 67 and all characteristics for a residue-free and antibacterial cleaning.

### Preferred areas of use are



Laboratory Techniques



Chemical and petrochemical industry



Food and beverage



Viscous and pasty media



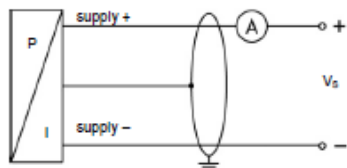
Pressure ranges <sup>1</sup>									
Nominal pressure gauge	[bar]	0.06	0.16	0.4	1	2	5	10	20
Overpressure	[bar]	2	4	6	8	15	25	35	45
Permissible vakuum	[bar]	-0.2	-0.3	-0.5			-1		
<sup>1</sup> On customer request we adjust the devices by software on the required pressure ranges (within the turn-down-possibility; starting at 0.02 bar).									
Output signal / Supply									
2-wire: 4 ... 20 mA	standard: analogue signal options: intrinsic safety (ia) intrinsic safety (ia) with HART®-communication					V <sub>S</sub> = 12 ... 30 V <sub>DC</sub> V <sub>S</sub> = 12 ... 28 V <sub>DC</sub> V <sub>S</sub> = 12 ... 28 V <sub>DC</sub>			
Current consumption	max. 25 mA								
Performance									
Accuracy <sup>2</sup>	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 <sub>max</sub> ≤ [(V <sub>S</sub> – V <sub>S min</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								
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)								
<sup>2</sup> accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)									
Permissible temperatures									
Thermal error	≤ ± (0.02 x turn-down) % FSO / 10 K in compensated range -20 ... 80 °C								
Permissible temperatures	medium: -25 ... 125 °C environment: -20 ... 70 °C storage: -30 ... 80 °C								
<sup>3</sup> Maximum permissible temperature with PVC pressure port is -25...60 °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 (25 ... 2000 Hz)								
Shock	100 g / 11 msec								
Materials									
Pressure port	inch thread, DRD and flange version, Varivent®, dairy pipe and clamp: stainless steel 1.4404 (316L)								
	optionally for G1 1/2" flush (DIN 3852): PVDF								
Housing	stainless steel 1.4301 (304)								
Viewing glass	laminated safety glass								
Seals	FKM EPDM others on request								
Diaphragm	ceramics Al <sub>2</sub> O <sub>3</sub> 99,9 %								
Media wetted parts	pressure port, seals, diaphragm								
Explosion protection									
Approval AX2-x act ci	IBExU05ATEX1105 X <b>zone 0/1 4:</b> II 2G Ex ia IIC T4 Gb II 1/2G Ex ia IIC T4 Ga/Gb II 1G Ex ia IIC T4 Ga <b>zone 20:</b> II 1D Ex ia IIIC T85 °C Da								
Safety technical maximum values for intrinsically safe version	U <sub>i</sub> = 28 V, I <sub>i</sub> = 98 mA, P <sub>i</sub> = 680 mW, C <sub>i</sub> = 0 nF, L <sub>i</sub> = 0 µH, C <sub>GND</sub> = 27 nF the supply connections have an inner capacity of max. 27 nF to the housing								
Permissible temperatures for environment	in zone 0: -20 ... 60 °C with p <sub>atm</sub> 0.8 bar up to 1.1 bar in zone 1 or higher: -40 ... 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 µH/m								
<sup>4</sup> 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“. The note under item 17 in the EC type-examination certificate must be observed!									

### Miscellaneous

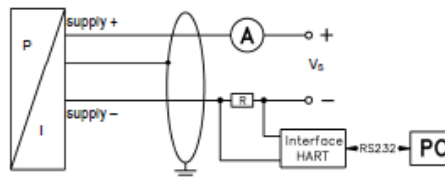
Display	LC display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication $\pm 9999$ ; 8-digit 14-segment additional display, digit height 5 mm; 52-segment bargraph; accuracy 0.1% $\pm 1$ digit
Ingress protection	IP 67
Installation position	any
Weight	min. 400 g (depending on mechanical connection)
Operational life	> 100 x 10 <sup>6</sup> cycles
CE-conformity	EMC Directive: 2014/30/EU
ATEX Directive	2014/34/EU

### Wiring diagram

#### 2-wire system (current)



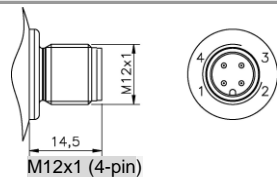
#### 2-wire-system (current) HART®



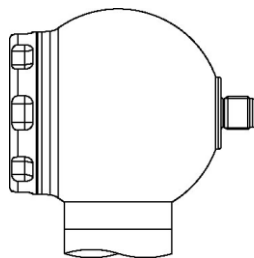
### Pin configuration

Electrical connection	M12x1 (4-pin)	cable colours (IEC 60757)
Supply +	1	wh (white)
Supply -	3	bn (brown)
Shield	plug housing	ye/gn (yellow / green)

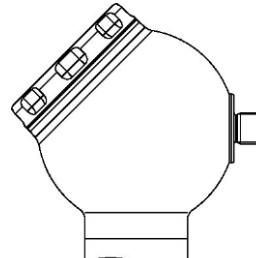
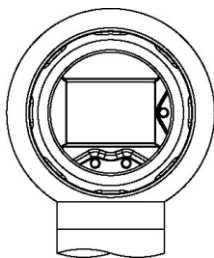
### Electrical connections (in mm)



### Designs



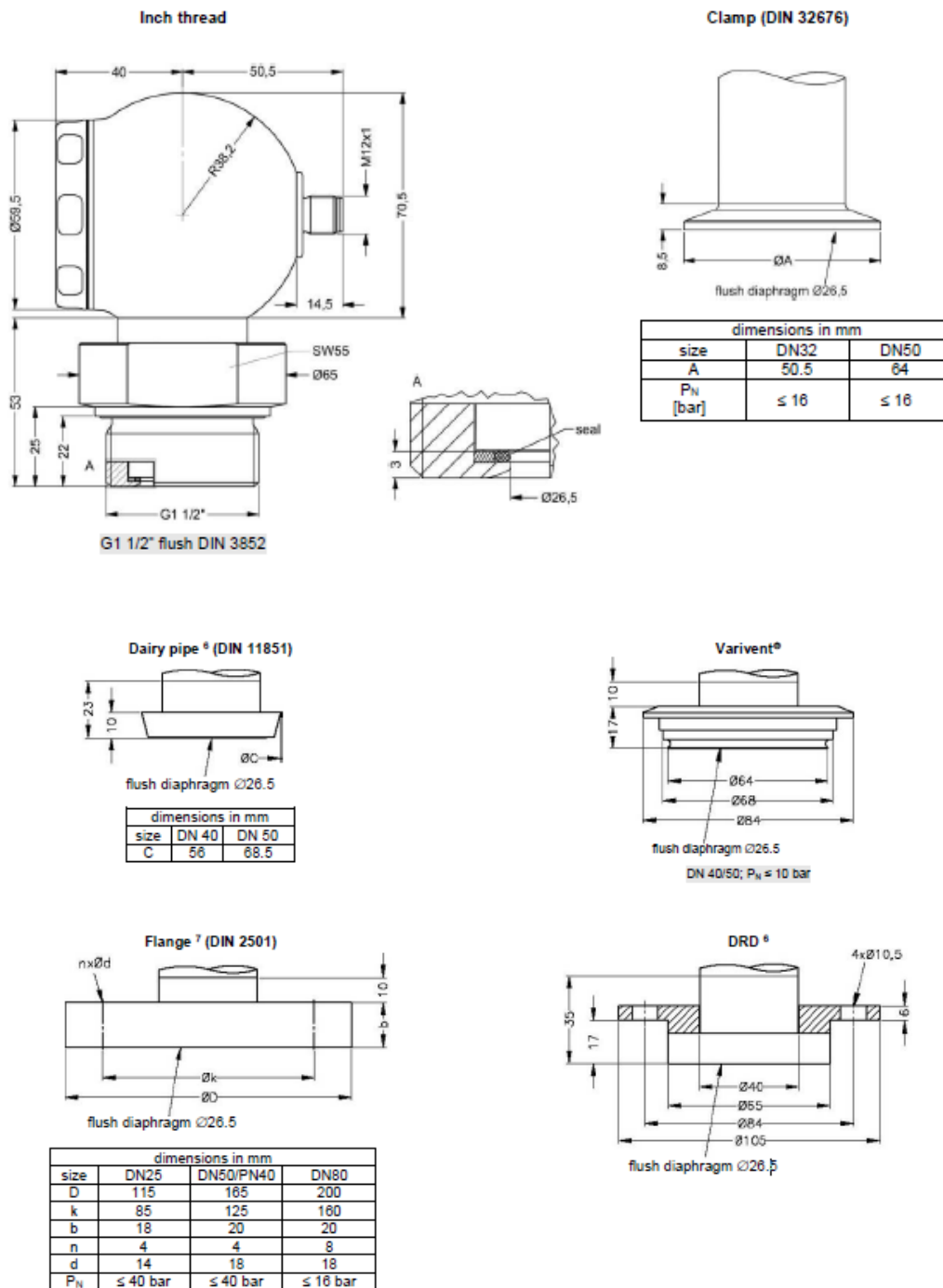
Side display



45° display

*5 all designs in combination with G1 1/2" flush in horizontal rotatable housing as standard;  
other mech. connections in rotatable housing on request*

### Dimensions (in mm)



<sup>6</sup> cup nut for dairy pipe or mounting flange for DRD is included in the delivery (already pre-assembled)

<sup>7</sup> DN80/PN16 possible with nominal pressure ranges P<sub>N</sub> ≤ 7 bar

HART® is a registered trade mark of HART Communication Foundation;

Varivent® is a trademark of GEA Tuchenhausen GmbH; Windows® is a registered trade mark of Microsoft Corporation

## Ordering code x|act ci

3.4.2020

x|act ci

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<b>Pressure</b>														
Gauge	5	1	E											
<b>Input [bar]</b>														
0 ... 0,06				0	6	0	0							
0 ... 0,16				1	6	0	0							
0 ... 0,4				4	0	0	0							
0 ... 1				1	0	0	1							
0 ... 2				2	0	0	1							
0 ... 5				5	0	0	1							
0 ... 10				1	0	0	2							
0 ... 20				2	0	0	2							
Customer	9	9	9											
<b>Design</b>														
Stainless steel ball housing - side display (IP 67)								K	H					
Stainless steel ball housing - 45° display (IP 67)								K	4					
<b>Output</b>														
4 ... 20 mA / 2-wire									1					
Intrinsic safety Ex ia 4 ... 20 mA / 2 wire									E					
HART® - Intrinsic safety Ex ia 4 ... 20 mA / 2-wire									I					
Customer									9					
<b>Accuracy</b>														
0,1 % ( $P_N \geq 1$ bar)									1					
0,1 % including Calibration Certificate ( $P_N \geq 1$ bar)									P					
0,2 % ( $P_N < 1$ bar)									B					
0,2 % including Calibration Certificate ( $P_N < 1$ bar)									Q					
Customer									9					
<b>Electrical connection</b>														
Connector M12 x 1, 4-pin (IP 67) - metal									M	1	0			
Customer									9	9	9			
<b>Mechanical connection</b>														
G 1 1/2" DIN 3852										M	0	0		
Clamp DN 1 1/2" (DN 32)										C	6	2		
Clamp DN 2" (DN 50)										C	6	3		
Dairy pipe DIN 11851 DN 40										M	7	5		
Dairy pipe DIN 11851 DN 50										M	7	6		
Flange DN 80/PN16 DIN 2501										F	1	4		
Flange DN 25/PN40 DIN 2501										F	2	0		
Flange DN 40/PN40 DIN 2501										F	2	2		
Flange DN 50/PN40 DIN 2501										F	2	3		
DRD Ø 65 mm (cup nut and mounting flange included)										D	R	D		
Customer										9	9	9		
<b>Diaphragm</b>														
Ceramic Al <sub>2</sub> O <sub>3</sub> 96 %													2	
Ceramic Al <sub>2</sub> O <sub>3</sub> 99,9 %													C	
Customer													9	
<b>Seals</b>														
Viton (FKM)														1
EPDM														3



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



Customer	9			
<b>Pressure port</b>				
Stainless steel 1.4404 (316 L)	1			
PVDF (only for mech.connection M00)	B			
Customer	9			
<b>Special version</b>				
Standard		0	0	0
Customer		9	9	9

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.



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