BD|SENSORS
pressure measurement

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 ... 160 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 connections (inch thread, Clamp, etc.)
- with integrated display and operating module
- diaphragm Al_2O_3 99.9 %

Optional versions

- IS-version:
  Ex ia = intrinsically safe version
- 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

- Food and Beverage
- Chemical and Petrochemical Industry
- Laboratory Techniques

Preferred using in

- Viscous and pasty media

BD SENSORS GmbH
BD-Sensors-Straße 1
D - 95199 Thierstein

Tel: +49 (0) 92 35 / 98 11- 0
Fax: +49 (0) 92 35 / 98 11- 11

www.bdsensors.com
info@bdsensors.de

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 on the required pressure ranges (within the turn-down-possibility; starting at 0.02 bar).								

Output signal / Supply		
Standard	2-wire: 4 ... 20 mA	V_S = 12 … 30 V_{DC}
Option: IS-protection	2-wire: 4 ... 20 mA	V_S = 12 … 28 V_{DC}
Option: IS-protection / HART®	2-wire: 4 ... 20 mA with HART® communication	V_S = 12 … 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} ≤ [(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	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	medium: environment: storage:	-25 ... 125 °C -20 ... 70 °C -30 ... 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

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

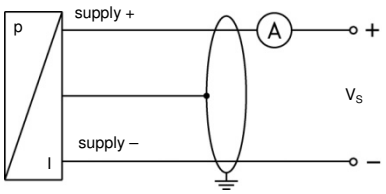
Materials	
Pressure port	inch thread, DRD and flange version, Varivent®, dairy pipe and clamp: stainless steel 1.4404 (316L) optionally for G1 1/2" flush (DIN 3852): PVDF
Housing	stainless steel 1.4301 (304)
Viewing glass	laminated safety glass
Seals	FKM (permissible temperature: -25 ... 125 °C) EPDM others on request
Diaphragm	ceramics Al_2O_3 99.9 %
Media wetted parts	pressure port, seals, diaphragm

Explosion protection	
Approval AX12-x|act ci	IBExU05ATEX1106 X **zone 0/1** [3]**:** II 2G Ex ia IIC T4 Gb II 1/2G Ex ia IIC T4 Ga/Gb II 1G Ex ia IIC T4 Ga **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, 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_{atm} 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
[3] 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!	

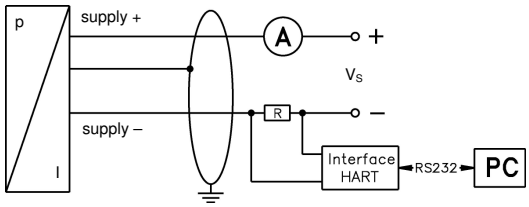
Miscellaneous	
Display	LC-display, visible range 32.5 x 22.5 mm; 5-digit 7-segment main display, digit height 8 mm, range of indication ±9999; 8-digit 14-segment additional display, digit height 5 mm; 52-segement bargraph; accuracy 0.1% ± 1 digit
Ingress protection	IP 67
Installation position	any
Weight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

Wiring diagram

2-wire-system (current)

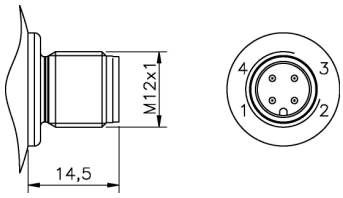


2-wire-system (current) HART®



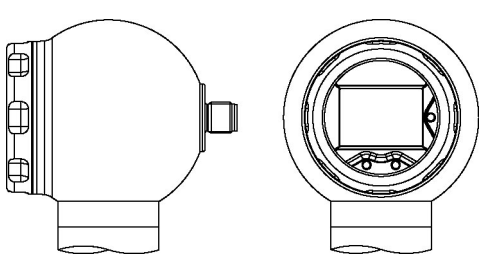
Pin configuration		
Electrical connections	M12x1 (4-pin)	cable colours (IEC 60757)
Supply + Supply –	1 3	wh (white) bn (brown)
Shield	plug housing	gnye (green-yellow)

Electrical connections (in mm)

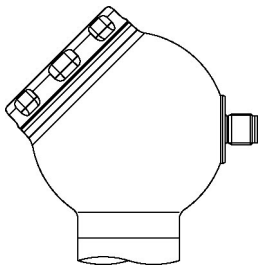


M12x1 (4-pin)

Designs [4]



side display

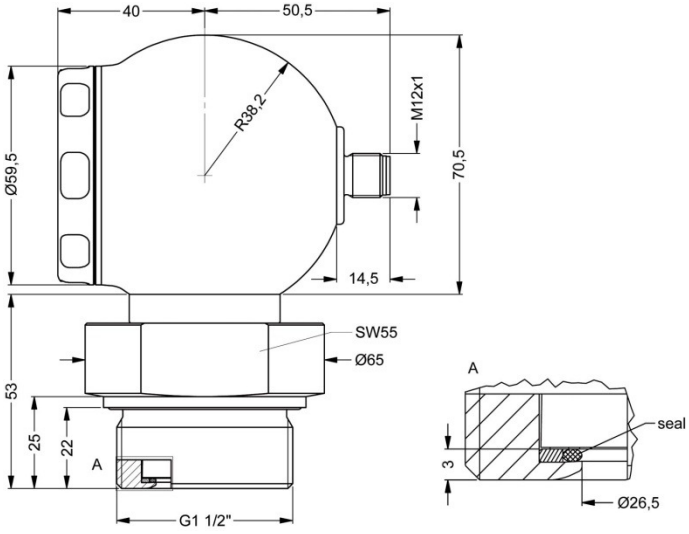


45° display

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

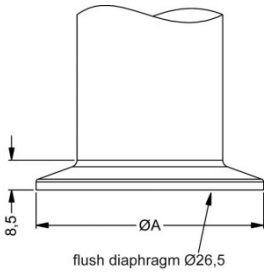
Dimensions (in mm)

Inch thread



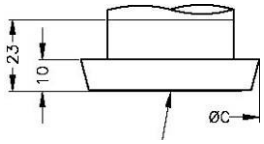
G1 1/2" flush DIN 3852

Clamp (DIN 32676)



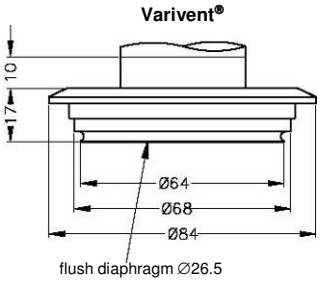
dimensions in mm		
size	DN32	DN50
A	50.5	64
P_N [bar]	≤ 16	≤ 16

Dairy pipe [6] (DIN 11851)



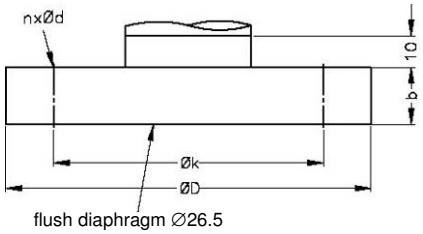
dimensions in mm		
size	DN 40	DN 50
C	56	68.5

Varivent®



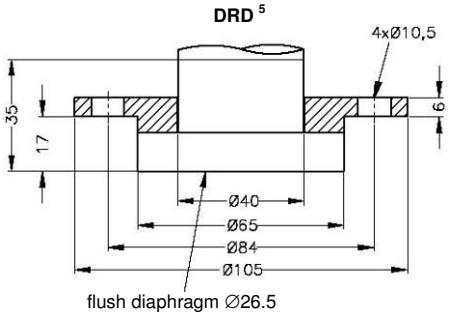
DN 40/50
P_N ≤ 10 bar

Flange (DIN 2501)



dimensions in mm			
size	DN25	DN50/PN40	DN80
D	115	165	200
k	85	125	160
b	18	20	20
n	4	4	8
d	14	18	18
P_N	≤ 40 bar	≤ 40 bar	≤ 16 bar

DRD [5]



[5] *cup nut for dairy pipe or mounting flang for DRD is included in the delivery (already pre-assembled)*
HART® is a registered trade mark of HART Communication Foundation;
Varivent® is a trademark of GEA Tuchenhagen GmbH; Windows® is a registered trade mark of Microsoft Corporation

Tel: +49 (0) 92 35 / 98 11- 0
Fax: +49 (0) 92 35 / 98 11- 11
www.bdsensors.com
info@bdsensors.de
BD|SENSORS pressure measurement

BD|SENSORS pressure measurement

Ordering code x|act ci

x|act ci [ ][ ][ ] - [ ][ ][ ][ ] - [ ][ ] - [ ] - [ ] - [ ][ ][ ] - [ ][ ][ ] - [ ] - [ ] - [ ] - [ ][ ][ ]

Option		Code	
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			
side display		K H	
45° display		K 4	
Output			
4 … 20 mA / 2-wire		1	
Intrinsic safety 4 … 20 mA / 2-wire		E	
Intrinsic safety 4 … 20 mA / 2-wire with HART®-communication		I	
customer		9	consult
Accuracy			
P_N < 1 bar	0.2 %	B	
P_N ≥ 1 bar	0.1 %	1	
customer		9	consult
Electrical connection			
Male plug M12x1 (4-pin)		M 1 0	
customer		9 9 9	consult
Mechanical connection			
G 1 1/2" DIN flush (DIN 3852)		M 0 0	
Clamp DN 32 / 1 1/2" (DIN 32676)		C 6 2	
Clamp DN 50 / 2" (DIN 32676)		C 6 3	
Dairy pipe DN 40 (DIN 11851) [1]		M 7 5	
Dairy pipe DN 50 (DIN 11851) [1]		M 7 6	
Varivent® DN 40/50 (P_N ≤ 10 bar)		P 4 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	
DRD Ø 65 mm [1]		D R D	
customer		9 9 9	consult
Diaphragm			
Ceramics Al_2O_3 99,9%		C	
customer		9	consult
Seals			
FKM		1	
EPDM		3	
customer		9	consult
Pressure port			
standard:	Stainless steel 1.4404 (316L)	1	
option for G 1 1/2" flush:	PVDF	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] cup nut resp. mounting flange is included in the delivery (already pre-assembled)

HART® is a registered trade mark of HART Communication Foundation; Varivent® is a brand name of GEA Tuchenhagen GmbH

BD|SENSORS GmbH
BD-Sensors-Straße 1
D - 95199 Thierstein

Tel. +49 (0) 9235 / 98 11 - 0
Fax +49 (0) 9235 / 98 11 - 11

www.bdsensors.de
www.bdsensors.com
info@bdsensors.de