Absolute pressure gauge with diaphragm
and switch function,Type series BF2…

Features

- Absolute pressure gauge with diaphragm and switch function
- Nominal ranges 0…60 mbar abs to 0…2500 mbar abs
- With integrated reference pressure chamber. Thus enabling absolute pressure to be measured.
- High quality case with bajonet ring NS 100/160 per EN 837-3 S1, alternative safety design per EN 837-1 S3
- Case and measuring flange of stainless steel, diaphragm of Duratherm
- High overload protection
- Accuracy class as per DIN 16085
- Switch function (electrical contact devices) per DIN 16085:
  - slow acting contact
  - magnetic snap contacts
  - inductive contact
  - inductive contact with integrated switching amplifier
- EAC declaration (upon request)

Application area

- General process technology
- Chemical and petrochemical industry
- Machinery construction
- Shipping

Options

- Approvals/Certificates
  - Explosion protection
  - Certificate of measuring equipment for Russian Federation
  - Material certificate per EN 10204
  - Calibration certificate per EN 10204
- Case with liquid filling
- Extended temperature range
- Connection to Zone 0

Application

Can be used as an excess pressure gauge with switch function (electrical contact device) universal use in measurement and control systems for indicating and monitoring preselectable minimum and/or maximum pressure values. Suitable for measuring liquids and gases; with open measuring flange also designed for viscous media and media containing solids. Because of its robust design, it is suitable for use in tough environments.

Technical data

Constructional design / case

Design:	High quality case with bajonet ring per EN 837-3 S1, material: stainless steel mat.-no. Nr. 1.4301 (304). With rear blow-out device, material: PUR, ventilation valve, material: PUR Alternative: Safety design with blow-out back and solid baffle wall per EN 837-1 S3, Material: Stainless steel 1.4301 (304)
Nominal size:	NS 100 or NS 160
Degree of protection per EN 60529:	■ Without filling: IP 65 ■ With filling, S3 case: IP 66
Case filling:	Labofin
Case seal:	Material gasket: NBR
Pressure chamber seal:	Material gasket: NBR

Vacuum-reference:	The device is fitted with a vacuum chamber which is sealed off from the process by a diaphragm. Thus, enabling absolute pressure to be measured.
Window:	Non-splintering laminated glass. Option: Non-splintering plastic (Macrolon)
Contact lock:	Stainless steel with NBR gasket
Measuring element:	Diaphragm
Movement:	Stainless steel segment
Scale:	Pure aluminium, white with black inscription Option: with red marking Special scale upon request
Pointer:	Pure aluminium, black, with micro adjustment for zero point correction
Mounting:	Via process connection
Electronical connection:	Connection plug with cable gland M20 x 1.5 and removable test cover, material: Macrolon

Weights:

NS 100:

flange Ø 100 without filling:	approx. 3.1 kg
flange Ø 160 without filling:	approx. 4.7 kg
flange Ø 100 with filling:	approx. 4.0 kg
flange Ø 160 with filling:	approx. 5.6 kg

NS 160:

flange Ø 100 without filling:	approx. 3.4 kg
flange Ø 160 without filling:	approx. 6.0 kg
flange Ø 100 with filling:	approx. 5.5 kg
flange Ø 160 with filling:	approx. 7.1 kg

Process connection

Design: Per EN 837-3, G1/2 B, 1/2" NPT or open measuring flange. Further process connections upon request.

Material wetted parts

Measuring element: Diaphragm: Duratherm (similar resistance as mat.-no. 1.4571 (316Ti))
Measuring flange: stainless steel mat.-no. 1.4571 (316TI)

Nominal range

See order details, further ranges upon request

Overload protection: Nominal ranges up to 250 mbar abs: overload protected up to 5 bar
Nominal ranges ≥ 250 mbar abs: overload protected up to 10 bar

Accuracy

Accuracy class:

NS 100 / NS 160

nominal range (mbar)	no. of contacts 1	2	3
≥ 60	cl. 1.6	cl. 2.5	-
≥ 160	cl. 1.6	cl. 1.6	-
≥ 400	cl. 1.6	cl. 1.6	cl. 2.5

Plus effect of switch function on indication per DIN 16085.

Temperature influence: Max. ± 0.8% / 10K of measuring span per EN 837-3.

Temperature ranges

	without filling	with filling
Ambient:	-20…70 °C	-20…70 °C (60 °C)[1]
Medium:	-20…110 °C	-20…70 °C (60 °C)[1]
Storage:	-40…70 °C	-40…70 °C (-20...60 °C)[1]

Extended temperature range (optional): [2]

	without filling	with filling
Ambient:	-40…100 °C	-40…80 °C (60 °C)[1]
Medium:	-40…150 °C	-40…150 °C[3]

Devices with classification per SIL2:

	without filling	with filling
Ambient:	-20…60 °C	-20…60 °C(40 °C)[1]
Medium:	-20…60 °C	-20…60 °C(40 °C)[1]

[1] Safety case S3 (IP 66)

[2] Inductive safety initiator necessary

[3] Limitation: nominal range ≤ 1 bar up to 110 °C

Tests and certificates

Ex-protection:

Magnetic snap contact:

Simple electrical apparatus per IEC/DIN EN 60079-11 suitable for intrinsically safe circuits Ex IIC TX.

Inductive contact:

Contact device suitable for intrinsically safe circuits

⟨Ex⟩ II 2G Ex ia IIC T4/T5/T6 Gb

Reg.-no.:
- PTB 99 ATEX 2219X
- PTB 00 ATEX 2049X

Ex-protection (ATEX) for mechanical devices:

⟨Ex⟩ II 2G c Tx

⟨Ex⟩ II 2D c Tx

Further details see operation instruction BA_037 and Ex Safety Instructions XA_005, XA_013, XA_014 and XA_021.

- EAC declaration (upon request)
- Certificate of measuring equipment for Russian Federation

Switch functions

Slow acting contact: Type L2
- max. 3 touch contacts
- Contact load: 10 W / 18 VA
- Switching up to 230 V DC
- Available with separate circuit (Type M2)

Magnetic snap contact: Type L4
- max. 3 touch contacts
- Contact load: 30 W / 50 VA
- Switching up to 230 V DC
- Available with separate circuit (Type M4)

Inductive contact: (standard) Type N4
- max. 3 contacts, contactless
- Control unit required, see product group M7

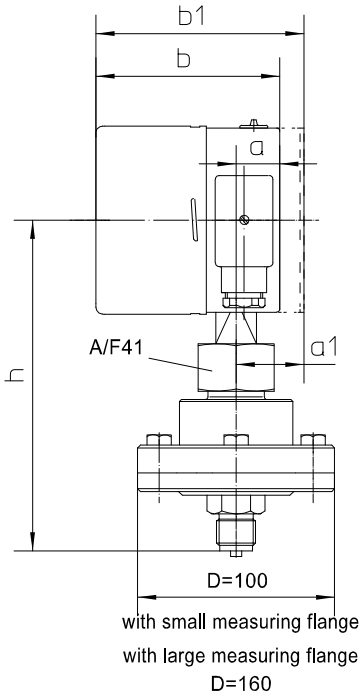
Inductive contact: (SN) Type N1
- Safety initiator
- max. 3 contacts, contactless
- Control unit required, see product group M7

Inductive contact inverse: (S1N) Type N2
- Safety initiator, inverse switching
- max. 2 contacts, contactless
- Control unit required, see product group M7

Inductive contact with integrated amplifier: Type N6
- max. 2 contacts, contactless
- 100 mA
- 3-wire technology, suitable for direct activation at a PLC

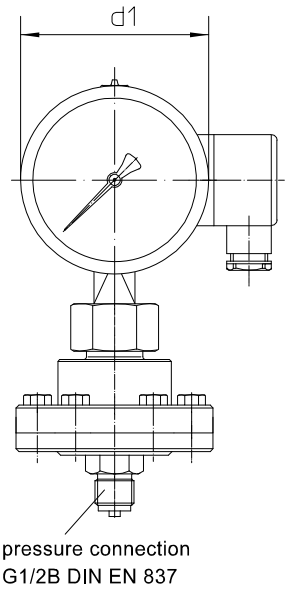
Further information see operating instruction BA_037 and Technical Information TA_039.

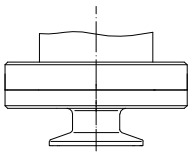
Dimensions



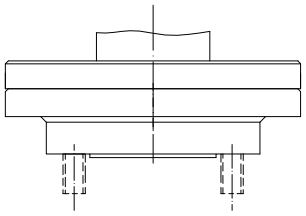
with small measuring flange

with large measuring flange
D=160





special design
small measuring flange DIN 28403
from nominal width 10 to nominal width 50
upon request



special design
open measuring flange per DIN or ASME
other versions upon request

dimensions (mm)						
					IP 66	
case	f	d1	a	b	b1	h
NS 100	89	100	19	108	112	178
NS 160	119	160	19	109	113	208

Order details

Absolute pressure gauge with diaphragm and switch function
Type series BF2…

Order details BF2..				
BF220.	case	NS 100, IP 65 without liquid filling		
BF230.		NS 160, NP 65 without liquid filling		
BF254.		NS 100 safety pattern gauge per EN 873- S3, IP 66 with liquid filling		
BF264.		NS 160 safety pattern gauge per EN 873- S3, IP 66 with liquid filling		
0	design	standard		
1		Ex-protection		
A70	nominal range	measuring flange Ø 160 mm	0...60 mbar abs	
A80			0...100 mbar abs	
A90			0...160 mbar abs	
A100			0...250 mbar abs	
A110		measuring flange Ø 100 mm	0..400 mbar abs	
A120			0...600 mbar abs	
A130			0...1000 mbar abs	
A140			0...1600 mbar abs	
A150			0...2500 mbar abs	

D….	overload protection	10 bar	for design with measuring flange Ø 100 mm	
E….		5 bar	for design with measuring flange Ø 160 mm	
1001	process connection	screwed connection	G1/2 B, material 1.4571 (316Ti)	
1011			1/2" NPT, material 1.4571 (316Ti)	
1041		open measuring flange PN10...40 mat.no. 1.4571 (316Ti), sealing surface DIN EN 1092-1 model B1 (DIN 2526 model C)mForC)	DN 25, for studbolts	measuring flange 100 mm
				measuring flange 160 mm
1081			DN 50, for studbolts	measuring flange 100 mm
1061			DN 50 with drilled holes	measuring flange 160 mm

	switch function	type of contact	number
L4 . 00	touch contact	magnetic snap contact	single contact
L4 . . 0			double contact
L4 . . .			triple contact
L2 . 00		slow acting contact [1]	single contact
L2 . . 0			double contact
L2 . . .			triple contact
M4 . . 0		magnetic snap contact, separated circuits	double contact
M4 . . .			triple contact
M2 . . 0		slow acting contact [1] separated circuits	double contact
M2…			triple contact

N4 . 00	inductive contact	standard initiator (N)	single contact
N4 . . 0			double contact
N4 . . .			triple contact
N1 . 00		safety initiator (SN)	single contact
N1 . . 0			double contact
N1 . . .			triple contact
N2 . 00		safety initiator invers (S1N)	single contact
N2 . . 0			double contact
N6 . 00		inductive contact with integrated switching amplifier, 3-wire technology PNP [1]	single contact
N6 . . 0			double contact

. . .	**switch function - per contact, replace point with number**	
1	switch	increasing pressure makes contact
2		increasing pressure breakes contact
4		decreasing pressure makes contact
5		decreasing pressure breakes contact
3	change-over element	increasing pressure makes or breaks contact
6		decreasing pressure makes or breaks contact

Additional features (to be indecated if required)		
T2	marking	on scale (pls specify)
W1020	material certificate	per EN 10204-3.1, wetted parts
W2673	certificate of measuring equipment for Russian Federation	
Z1	connection to Zone 0 [2]	with Zone 0 adapter (coupler element KF6)

Order code (example): BF2540 – A110 – L2230 - D1041 - …

[1] not for devices with Ex-protection
[2] for devices with Ex-protection, only - not with magnetic snap contact