



Application area

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

Features

- Pressure switch with bourdon tube for plants requiring special supervision,
- Nominal ranges -1...0 bar to -1...24 bar, 0...1 to 0...400 bar
- High quality case with bayonet ring DN 100/160 per EN 837-1 S1, alternative safety version per EN 837-1 S3
- Case and measuring element of stainless steel
- Accuracy class as per DIN 16085
- Inductive contact

Options

- Approvals/Certificates
 - Explosion protection
 - Certificate of measuring equipment for Russian Federation
 - Material certificate per EN 10204
 - Calibration certificate per EN 10204
 - Classification per SIL2
- Case with liquid filling
- Oxygen free of oil and grease
- Connection to Zone 0

Application

Pressure switches with bourdon tubes are pieces of equipment with safety functions as set down in the Pressure Equipment Directive (PED). They are suitable for protecting the pressure device should the pressure rise above, or drop below, the approved boundary limits. They come under the remit of PED 1G Category IV and have been subjected to an EC type-examination. The requirements of Approval Certificate Pressure 100 from the German Technical Inspection Authority (VdTÜV) are met. These pressure measuring devices may only be operated with the electrical evaluation units set out below, and within the area of application of this certificate and the VdTÜV component identification number. The pressure switch is composed of the pressure measuring device and electrical evaluation unit. Because of its robust design, it is suitable for use in tough environments. The pressure switches are suited for connection to Zone 0, when fitted by manufacturer with Zone 0 adapter.

Technical data

Constructional design / case

Design: High quality case with bayonet ring per EN 837-1 S1, material: stainless steel mat.-no.-Nr. 1.4301 (304) ; with blow-out device, material: PUR, filling plug, material: PUR

Alternative:

Safety version with blow-out back and solid baffle wall per DIN EN 837-1 S3, Material: Stainless steel 1.4301 (304), pressure compensation diaphragm: silicone

Nominal size: 100 or 160 mm

Degree of protection per EN 60529:	<ul style="list-style-type: none"> ■ Without filling: IP 65 ■ With filling S1 case: IP 65 ■ With filling S3 case: IP 66
Case filling:	Labofin
Atmosph. pressure compensation:	Standard case, filled, ≤ 10 bar: with reclosable filling plug Safety case, filled: with pressure compensation diaphragm, material: silicone
Case seal:	Material gasket: NBR
Window:	Non splintering laminated glass
Contact lock:	Stainless steel with NBR gasket, sealable
Measuring element:	Bourdon tube <ul style="list-style-type: none"> - c-type < 60 bar - spiral ≥ 60 bar
Movement:	Stainless steel segment
Scale:	Pure aluminium, white with black inscription
Pointer:	Pure aluminium, black, with micro adjustment for zero-point correction
Mounting:	Via process connection, upon request with flange for surface mounting or for flush mounting with DIN mounting flange.
Electronical connection:	Connection plug with cable gland M20 x 1.5 and removable test cover, material: Macrolon
Electrical evaluation unit:	Following evaluation units meet the requirements of the VdTÜV data sheet "Druck100": Make Pepperl+Fuchs, switch amplifier: <ul style="list-style-type: none"> ■ Model KHA6-SH-Ex1, PTB 00 ATEX 2043 ■ Model KFD2-SH-Ex1, PTB 00 ATEX 2042 <p>Make Siemens: decentralised periphery SIMATIC ET 200</p> <ul style="list-style-type: none"> ■ Model 6ES7-326-1RF00-0AB0 <p>Relevant data sheets must be taken into account.</p>
Weight:	DN 100 without filling: approx. 0.9 kg DN 160 without filling: approx. 1.8 kg DN 100 with filling: approx. 1.5 kg DN 160 with filling: approx. 3.6 kg

Process connection

Design: Per DIN EN 837-1.
G1/2 B, 1/2" NPT or M 20 x 1.5, bottom or back eccentric connection.
Optional with throttle screw for system damping, further process connections upon request

Material wetted parts

Measuring element: Bourdon tube and pressure connection material stainless steel mat.-no. 1.4571 (316Ti)

Nominal range

See order details, other ranges upon request

Overload protection Standard: 1.3 times

Accuracy

Accuracy class: Max. effect of contact devices on indication per DIN 16085

DN 100

Nominal-range (bar)	no. of contacts	
	1	2
1	cl. 1	cl. 1.6
≥ 1,6	cl. 1	cl. 1

DN 160

Nominal-range (bar)	no. of contacts	
	1	2
1	cl. 1	cl. 1.6
1,6	cl. 1	cl. 1.6
≥ 2,5	cl. 1	cl. 1

Temperature influence: Max. ± 0,4% / 10K of measuring span per EN 837-1

Temperature ranges

	without filling	with filling
Ambient:	-20...70 °C	-20...70 °C (40 °C) ¹
Media:	-20...70 °C	-20...70 °C
Storage:	-40...70 °C	-20...70 °C

¹ design in safety case S3

Approvals/Certificates

Ex-protection: Inductive contact device:
Contact device suitable for intrinsically safe circuits.

 II 2G Ex ia IIC T4/T5/T6 Gb

Reg.-no.: PTB 00 ATEX 2049X

Further details see operating instruction BTA_037.

SIL 2: Functional safety:
per EN/IEC 61508, classification per SIL 2, TÜV-Reg.-Nr. 44 799 09 555647, for devices with inductive contact only (Typ N1, N2 and N4).

EC-Type Examination: EC-Type Examination per Directive 97/23/EG, certificate no. 07 202 1321 Z 0001/14/D/01, piece of equipment with safety function cat. IV VdTÜV-component identification number:

- TÜV.SDW.14-234
- TÜV.SDWF.14-234
- TÜV.SDWFS.14-234

- Certificate of measuring equipment for Russian Federation

Electrical contact device

Inductive contact:
(SN)

Type N4

- max. 2 contacts, contactless
- Control unit required, see product group M7
- Safety initiator

Further information see operating instruction BTA_037.

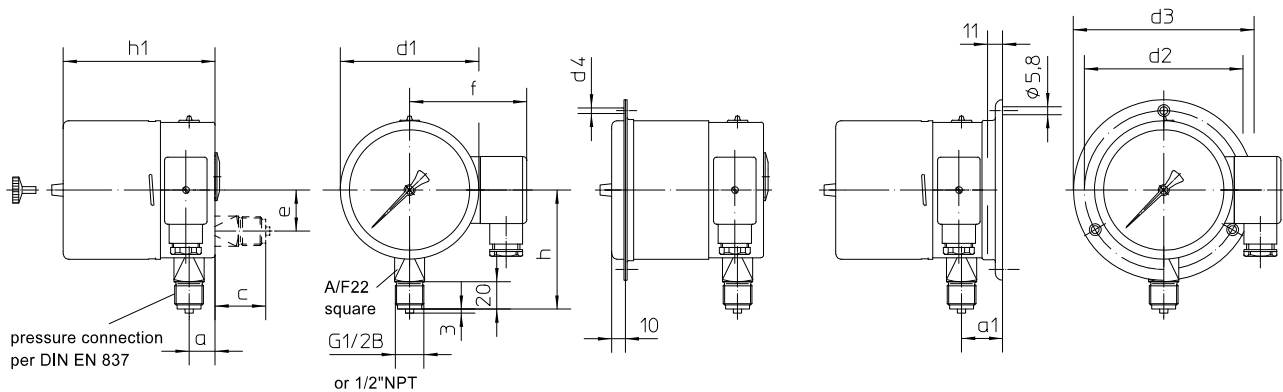
Inductive contact inverse:
(S1N)

Type N5

- max. 2 contacts, contactless
- Control unit required, see product group M7
- Safety initiator, inverse switching

Further information see operating instruction BTA_037.

Dimensions



Standard design

for flush mounting

for surface mounting

dimension standard design (mm)											
case	d1	h1	a	c	e	f	h	d2	d3	d4	a1
NG 100	100	111	19	37	30	89	83	116	132	4.8	30
NG 160	160	112	19	37	60	119	113	178	196	5.8	30

dimensions safety case (mm)											
case	d1	h1	a	c	e	f	h	d2	d3	d4	a1
NG 100	100	123	37	-	-	89	83	116	132	4.8	-
NG 160	160	133	37	-	-	119	113	178	196	5.8	-

Contact settings:

The contacts can be adjusted over the entire indicating range. The black scale section may only be used for pressure-limiting applications. Adjustment is carried out by pressing in, and rotating the internal adjusting finger, using the accompanying adjusting key at the adjustment lock.

Signal evaluation:

The fitted inductive proximity switches are suitable for connection to switch units with normalized input, according to DIN 19234.



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Order details

Pressure switch with bourdon tube for plants requiring special supervision Type series BN4...

Order details BN4...				
BN4200	standard case IP 65	DN 100	without liquid filling	process connection bottom
BN4210			without liquid filling	process connection back
BN4220			with liquid filling	process connection bottom
BN4230			with liquid filling	process connection back
BN4300		DN 160	without liquid filling	process connection bottom
BN4310			without liquid filling	process connection back
BN4320			with liquid filling	process connection bottom
BN4330			with liquid filling	process connection back
BN4250	safety case IP 65, per EN 873-1 S3	DN 100	without liquid filling	process connection bottom
BN4600		DN 160	without liquid filling	process connection bottom
BN4540	safety case IP 66, per EN 873-1 S3	DN 100	with liquid filling	process connection bottom
BN4640		DN 160	with liquid filling	process connection bottom

A2...	process connection	G1/2 B
B2...		1/2" NPT
C2...		M20 x 1,5
086	nominal range [bar]	-1...0 ¹
087		-1...0.6 ¹
088		-1...1.5
089		-1...3
090		-1...5
091		-1...9
092		-1...15
093		-1...24
053		0...1
054		0...1.6
055		0...2.5
056		0...4
057		0...6
058		0...10
059		0...16
060		0...25
061		0...40
062		0...60
063		0...100
064		0...160
065	0...250	
066	0...400	

	contact device	type of contact	number
N4 . 00	inductive contact	safety-initiator (SN)	single contact
N4 . . 0			double contact
N5 . 00		safety-initiator-inverse (S1N)	single contact
N5 . . 0			double contact

...	switch function - per contact, replace point with number	
2	switch	increasing preassure breaks contact
5		decreasing preassure breaks contact

Additional features (to be indicated in case of need only):		
V2	mounting	rear flange fur surface mounting ²
V3		front flange for flush mounting
W2603	functional safety per IEC/EN 61508, classification per SIL2, TÜV-reg.-no. 44 799 09 555647	
W2673	certificate of measuring equipment for Russian Federation ³	
Z1	connection to zone 0	with zone 0 adapter (coupler element KF6)

Order code (example): BN4200 – A2056 – N4200 - ..

¹ not with case filling

² standard case, only

³ not for devices with Ex-protection