



Design Features

- Measuring range 0...1 bar to 0...25 bar (differential pressure)
- For use outdoors and in aggressive environments
- Stainless steel case and measuring system
- Duratherm diaphragm
- High operating pressures up to 500 bar
- High excess pressure protection up to operating pressure value
- Mechanical or alternatively inductive contact devices according to DIN 19234

Application

Can be used as a differential pressure measuring system for high excess pressure ranges with electrical contact device for universal use in measurement and control systems for indicating and monitoring pre-selectable minimum and/or maximum pressure values.

Because of its robust design, it is suitable for use in tough environments in the chemical industry, in ocean shipping and in process engineering.

Design and Function

Differential pressure gauges with diaphragm measuring system and electrical contact devices enable circuits to open or close by means of a wiper which moves with the actual value pointer. The limit values can be adjusted at the front over the complete indicating range with the help of a supplied wrench. Mechanical contacts are used as slow acting contacts or with magnets. The devices can also be supplied with inductive proximity switches per DIN 19234 (NAMUR).

Technical Data

Case

stainless steel material no. 1.4301, nominal size 100 and 160 mm

Case design

protection type IP 54, alternatively IP 66 with liquid filling

Measuring flange

stainless steel material no. 1.4404 with integrated diaphragm seal material no. 1.4404

Measuring system

diaphragm duratherm, all wetted parts of material no. 1.4404

Process connection

- screw male G 1/2 A axial
- alternatively G 3/8 screw-in thread adaption per DIN 19213, arranged vertically to measuring flange
- valve block mounting possible, adaption per DIN 19213
- diaphragm seal fitting with remote line

Pointer element

stainless steel

Scale

aluminium, white with black inscription. Alternatively with red reference marking or with fixed reference pointer

Pointer

aluminium, black, with micro adjusting device for zero-point correction

Window

multi-layer non splintering laminated glass, alternatively from macrolon also with trailing or adjustable reference pointer

Case seal

Buna N

Explosion-proofing membrane

Buna N (for case without filling, only)

Damping of pressure element assembly

liquid filling for damping vibrations

Measuring ranges

0...1 bar to 0...25 bar loading up to full scale. Range graduation for positive and negative indication possible

Operating pressure

250 bar, 400 bar, 500 bar see order details

Excess pressure protection

single and double-sided up to operating pressure value

Accuracy

class 1.6 per DIN 16085, however depending on measuring range and contact device

Influence operating pressure

class accuracy in standard design

Operating temperature range

-20...+70 °C, standard other values upon request

Influence ambient temperature

≤ 0.03 %/K

Connection plug

waterproof connection box with conduit thread entry and removable test cover, material macrolon

Mounting

robust wall bracket (model and bore hole schematic see dimensions)

Weights

for DN 100 with filling
vertical and axial connection: approx. 15 kg
valve block design: approx. 18 kg
diaphragm seal design: approx. 23 kg + 2 diaphragm seals

Special design

- with certification for material testing per EN 10204 (DIN 50049)

Information on other models upon request or see order details

Inductive contact devices

Insulating parts

duroplastic with high dielectric strength

Metal parts

corrosion-proof
nickel silver or stainless steel

Bearing

jewel hole, stainless steel axles
smooth-running

EMC

as per EN 60947-5-2, appendix x

initiators ¹	SJ2-N
case diamter	100
PTB no.	Ex-83/20022X
ex group	EEx ib IIC T6 or EEx ia IIC T6
allowed ambient temperature for device	standard -25...+70 °C
max. values U _o	in hazardous areas dependent on temperature class, values on request
I _k	≤ 15.5 V
P	≤ 50 mA
self-inductance	≤ 160 mW
self-capacitance	30 uH
	20 nF

¹ other initiators upon request

Touch contacts

Allowed ambient temperature

-25...+70 °C (other values on request)

Metal parts

corrosion-proof
nickel silver or nickel-plated steel

Bearing

jewel hole; stainless steel axles
smooth-running and wear resisting

Contact material

silver-nickel alloy (AG80Ni20) as standard assembly. For low voltages up to 24 V and currents up to 20 mA, we recommend silver palladium contacts with 10 µm gold plating, which are always delivered with ex proofed models. Further contact materials upon request.

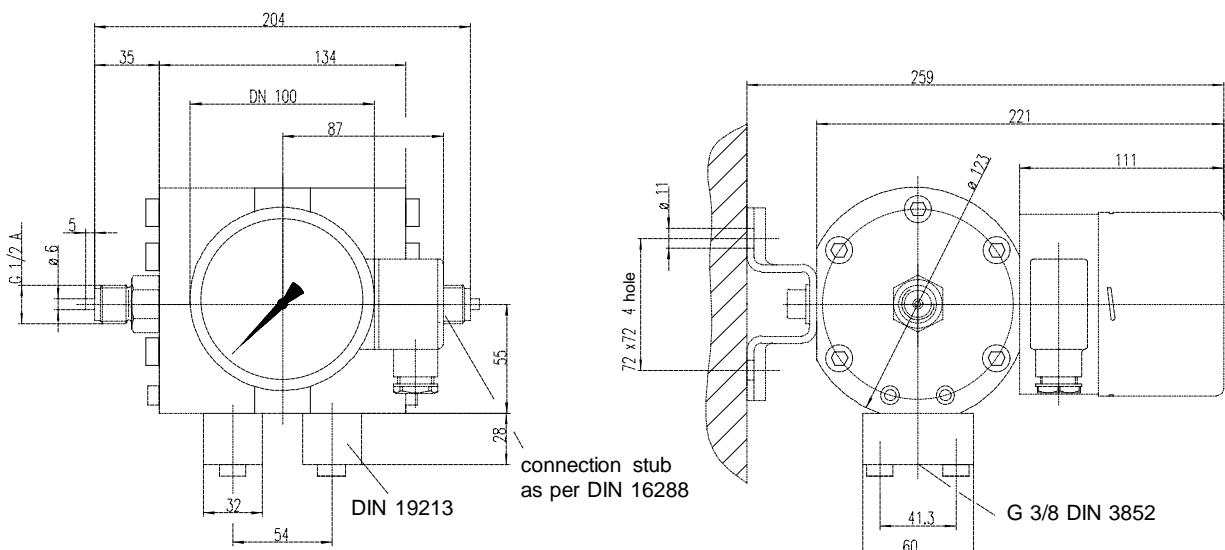
Devices, which switch signals below 24 V and 20 mA, should not be specified with liquid filling, because switching reliability is reduced by liquid films between the contacts. This applies to all contact materials.

max. contact load under resistive and inductive load and operation in air							
voltage per DIN IEC 38		slow acting conatct			magnetic snap contact		
DC voltage V	AC voltage V	DC resistive load mA	AC resistive load mA	inductive load AC voltage cos φ > 0.7 mA	DC resistive load mA	AC resistive load mA	inductive load AC voltage cos φ > 0.7 mA
220	230	40	45	25	100	120	65
110	110	80	90	45	200	240	130
48	48	120	170	70	300	450	200
24	24	200	350	100	400	600	250

limit values for the contact load under resistive load and operation in air (per DIN VDE 0660, section 100 and section 200)		
	slow acting contact	magnetic snap contact
rated insulation voltage U	61 - 300 V	61 - 300 V
rated voltage U _{eff} max.	250 V	250 V
rated current:		
making current	0.7 A	1.0 A
cutoff current	0.7 A	1.0 A
constant current	0.6 A	0.6 A
switching capacity	10 W 18 VA	30 W 50 VA

The use of contact protection relays is recommended in order to provide the greatest switching reliability possible, to prevent contact interruptions and to increase the switching capacity. The service life of the contacts is considerably increased, because 99% of the time the contacts are opened and closes in a voltage-free state. This switching amplifier should definitely be used in measuring devices with liquid filling.

Dimensions



Connection dimensions for valve block design resp. diaphragm seal design upon request

Switch functions and connection diagram

Switch function, terminal connections and directions of effect are realized according to the DIN 16085 draft. With regard to switches, it should be noted that a contact which closes with increasing pressure corresponds to a contact which opens with decreasing pressure. However, because of the switching hysteresis, they are adjusted differently.

Switch function and direction of action

switching element	code number (order code)	direction of action	switch function	
			slow acting contact magnetic snap contact	inductive contact device
makers open	1	increasing pressure	makes contact	makes contact; control current on
	4	decreasing pressure		
breakers closed	2	increasing pressure	breaks contact	breaks contact; control current off
	5	decreasing pressure		
change over elements ¹	3	increasing pressure	switches the contact	not applicable
	6	decreasing pressure		

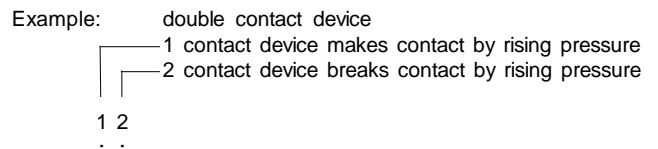
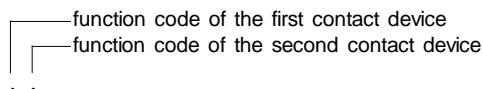
¹ Unless otherwise specified, the contacts are not adjusted overlapping.
Handle change over elements as double contacts.

Connection diagram

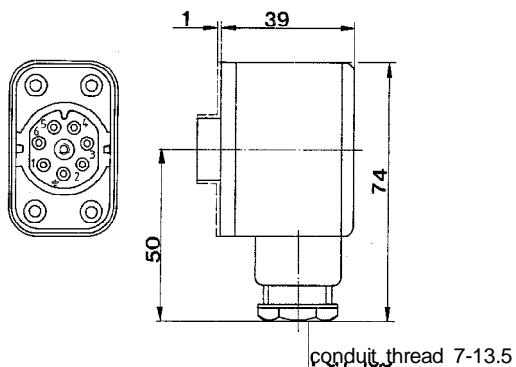
contact device	switch function		assignment of connection terminals			
			slow acting and magnetic snap contact		inductive contact device	
			common supply	separate supply		polarity
1st contact	makers open contact		1	1	1	-
			4	2	2	+
	breakers closed contact		1	1	1	-
			4	2	2	+
2nd contact	change over elements	mo contact	1	-	-	-
		bc contact	2	-	-	-
	makers open contact		4	3	3	-
			2	4	4	+
breakers closed contact		2	3	3	-	
		4	4	4	+	

Identification of the switch functions

The switch functions are clearly identified by a two-digit number key. The key must be specified in the order details.



Connection plug / Connection diagram



Order Details

- please give additional specifications for models not listed -

Differential pressure gauge with electrical contact device ¹

case	· DN 100		BG32
	· DN 160		BG33
case design	· IP 54, standard		0
	· IP 66 with liquid filling		4
design	· standard		0
	· with ex-protection		1
op. pressure/ process connection	op. pressure	<u>process connection</u>	
		250	· axial thread connection G 1/2 A
	· vertical thread connection G 3/8		A5
	· with flanged 3fold valve block for pipe-Ø 12 mm		A2
	400	· for diaphragm seal connection	A3
		· vertical thread connection G 3/8	C5
	500	· with flanged 3fold valve block for pipe-Ø 12 mm	C2
		· axial thread connection G 1/2 A	C4
	measuring range	0...1 bar	
0...1.6 bar		054	
0...2.5 bar		055	
0...4 bar		056	
0...6 bar		057	
0...10 bar		058	
0...16 bar		059	
0...25 bar		060	
contact	<i>touch contact</i>		
	· combination contact with magnet ²		L4
	· combination contact w. magnet, gold-plated contacts		L1
	· slow acting contact ²		L2
	· sep. circuit combination contact with magnet ²		M4
	· sep. circuit combination contact with magnet, gold-plated contacts		M1
	<i>inductive contact</i>		
	· initiator (N)		N4
	· safety initiator (SN)		N1
switch function	· safety initiator (S1N)		N2
	· 1 limit value (1st figure per table)		.00
	· 2 limit values (1st + 2nd figure per table)		..0
Order code (example):			BG3200 A4058 M4500

switch function	order code
· increasing pressure makes contact	1
· increasing pressure breaks contact	2
· decreasing pressure makes contact	4
· decreasing pressure breaks contact	5
· change-over elements increasing pressure switches	3
· change-over elements decreasing pressure switches	6

¹ differential pressure gauge for high operating pressure with pneumatic contact device upon request

² not with ex-protection