

## Standard system contact pressure gauges for the chemical industry

with or without dampening  
with magnetic snap-action contacts  
or inductive contacts

Nominal sizes ND 160

Connection position bottom, radial  
or back, eccentric



### Description

Contact pressure gauges with electrical alarm contacts are suitable for controlling or regulating process sequences. The contacts open or close electrical circuits in relation to the position of the pointer on the pressure gauge.

Our contact pressure gauges with the Bourdon tube system are used at process pressures of approximately 1 bar and upwards. The materials used make the gauges suitable for chemically aggressive gases or liquids, although these may not be too viscous or be susceptible to crystallization. The inexpensive tried and tested Bourdon tube system coupled with a modern modular principle provides a very reliable yet inexpensive contact pressure gauge.

Gauges with liquid filling are damped if pressure pulses or mechanical vibrations arise. This extends the service life and the gauge display remains largely vibration free. The location of the pressure connection at the bottom or back allows different methods of installation.

Electrical alarm contacts are used as magnetic snap-action contacts, especially in harsh industrial conditions. The high contact pressure and the choice of different electrical contact materials enable high currents to be switched reliably. **If the electrical switching capacities of the alarm contacts are exceeded or not reached (see DE 1231), a relay is to be used to provide an appropriate current rating (see DE 1230).**

Inductive alarm contacts operate without physical contact and thus have no unfavourable effects on the pressure measuring system while having an unlimited service life. A control unit is always needed to operate these contacts. Contact pressure gauges with inductive alarm contacts can be used in potentially explosive atmospheres, provided that the appropriate regulations are complied with.

### Features

- o Modular construction system ensures high reliability and long service life
- o Liquid dampening provides vibration-free display
- o Chemical resistant due to stainless steel design
- o Case, stainless steel 1.4301
- o Stainless steel measuring system 1.4571
- o Protection to IP 65
- o Accuracy class 1.0
- o Up to four alarm contacts possible
- o Suitable for programmable controller

### Measuring ranges



0 ... 1 bar to 0 ... 1600 bar

### Applications

Process engineering, Mechanical engineering, plant construction, water treatment

**Models: P2391, P2393, P2401, P2403, P2411, P2413, P2421, P2423**

## Technical data

Models	P2391	P2401	P2393	P2403	P2411	P2421	P2413	P2423	Options
Nominal size	160								
Symbol									
Contact type	Magnetic snap-action		Inductive		Magnetic snap-action		Inductive		
Number of contacts *	1 to 4 depending on measuring range		1 to 3 depending on measuring range		1 to 4 depending on measuring range		1 to 3 depending on measuring range		
Liquid filling	--	Poly-butene	--	Poly-butene	--	Poly-butene	--	Poly-butene	
Electrical connection	Cable connector right hand side. 6 screw terminals + PE, cross section of the conducting wire 2.5 mm <sup>2</sup> Screw type conduit fitting M20x1.5, outgoing downwards								back (without pressure relief opening in case)
Accuracy class	Class 1.0 to EN 837-1								
Ranges	0 ... 1 bar to 0 ... 1600 bar negative or positive / negative and positive gauge pressure								0.6 bar or 2100 bar
Application	Constant load: up to full scale value Alternating load: up to 0.9 x full scale value short-time: overload capacity 1.3 x								
Case	Stainless steel 1.4301, pressure relief opening								
Bezel	Stainless steel 1.4301, bayonet ring								polished, triangular ring
Mounting flange	none								Front flange / rear flange, Stainless steel 1.4301
Window	Laminated safety glass								
Dial	Aluminium, white, scale and imprint black								
Pointer	Aluminium, black								
Movement	Stainless steel								
Measuring element	Stainless steel ( Bourdon tube <100 bar, helical tube ≥100 bar)								
Pressure connection	Stainless steel 1.4571								
- position	radial bottom				back eccentric				
- thread	G ½ B, or ½ - 14 NPT								Other threads on request
Temperatures									Without liquid filling
- Medium	Tmin. -20°C, Tmax. 80°C								Tmax. 100°C
- Ambient	Tmin. -20°C, Tmax. 60°C								Tmin. - 40°C
Temperature drift	0.4%/10K if deviation from normal temperature 20°C								
Protection to EN 60 529/IEC 529	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	
Throttle	without								∅ 0.5 ; ∅ 0.8
Weight approx.	2.2 kg	3.8 kg	2.2 kg	3.8 kg	2.2 kg	3.8 kg	2.2 kg	3.8 kg	

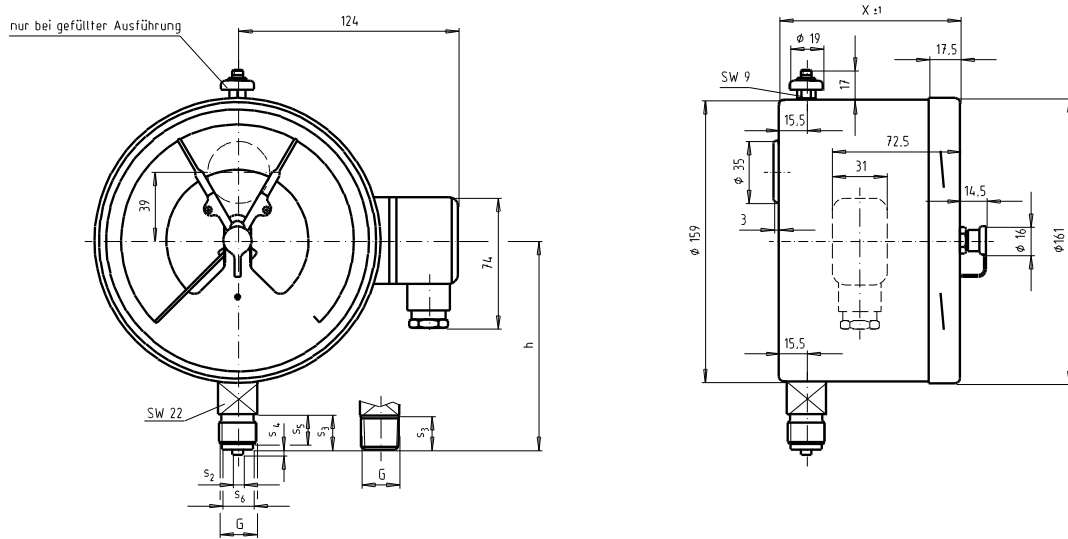
### \* Number of contacts

Measuring range	Magnetic snap-action contact	Inductive contact
1.0 bar	1	2
1.6 bar	2	3
above 4 bar	4	3

See data sheet - DE 1230 and DE 1231 for electrical data

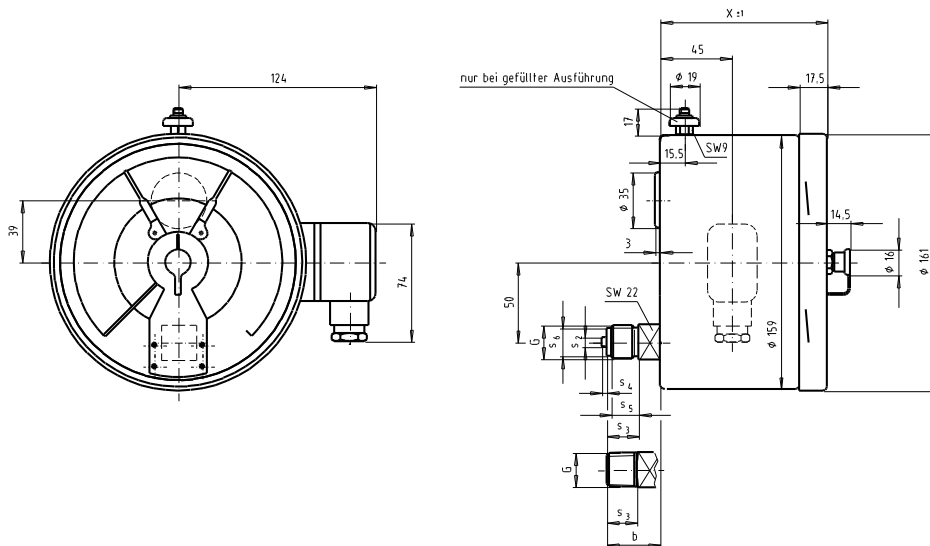
## Dimensions

Connection position bottom, radial Model: P2391, P2393, P2401, P2403



Contact typ	Rangs 0 – 60 bar Dimension X	Rangs 100– 1600 bar Dimension X
1 + 2 - fold	102	116
3 + 4 - fold	116	129,5

Connection position back, eccentric Model: P2411, P2413, P2421, P2423



thread	Dimensions in mm						
	h±1	b±1	s <sub>2</sub>	s <sub>3</sub>	s <sub>4</sub>	s <sub>5</sub>	s <sub>6</sub>
G½ B	118	33,5	ø6	20	3	17	ø17,5
G½ B JIS	118	33,5	ø5	20	3	--	--
G¼ B	111	26,5	ø5	13	2	11	ø9,5
G3/8 B	114	29,5	ø5,5	16	3	14	ø13
M20x1,5	118	33,5	ø6	20	3	17	ø17,5
M12x1,5	111	26,5	ø5	13	2	11	ø13
½NPT	117	32,5	--	19	--	--	--
¼NPT	111	26,5	--	13	--	--	--
R½-2999	117	32,5	--	19	--	--	--
R¼-2999	111	26,5	--	13	--	--	--

Contact typ	X
1+2 -fold contacts	105
3 -fold contacts	
2 -fold contact separat circuit	
4 -fold contact	119
3 -fold contact separat circuit	

Modifications reserved