

# Bourdon tube pressure gauge, stainless steel

## For the process industry, standard version

### Models 232.50, 233.50, NS 63 [2 ½"], 100 [4"] and 160 [6"]

WIKA data sheet PM 02.02



for further approvals  
see page 5

#### Applications

- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Chemical and petrochemical industries, oil and gas industry, power engineering and also water and wastewater technology
- Machine building and general plant construction

#### Special features

- Excellent load-cycle stability and shock resistance
- With case filling (model 233.50) for applications with high dynamic pressure loads and vibrations
- Completely from stainless steel
- Scale ranges from 0 ... 0.6 to 0 ... 1,600 bar [0 ... 10 to 0 ... 20,000 psi]



**Bourdon tube pressure gauge, model 232.50,  
NS 100 [4"]**

#### Description

This high-quality Bourdon tube pressure gauge has been designed especially for the process industry.

The use of high-quality stainless steel materials and the robust design are geared to applications in the chemical and process engineering industries. Thus the instrument is suitable for liquid and gaseous media, also in aggressive environments.

Scale ranges of 0 ... 0.6 to 0 ... 1,600 bar [0 ... 10 to 0 ... 20,000 psi] ensure the measuring ranges required for a wide variety of applications.

WIKA manufactures and qualifies the pressure gauge in accordance with the standards EN 837-1 and ASME B40.100. This instrument has as safety function a blow-out device with blow-out plug on the back of the case. In the event of a failure, overpressure can escape there.

The model 233.50 with liquid-filled case is suitable for high dynamic pressure loads and vibrations.

# Specifications

Basic information	
<b>Standard</b>	<ul style="list-style-type: none"> <li>■ EN 837-1</li> <li>■ ASME B40.100</li> </ul> <p>For information on the "Selection, installation, handling and operation of pressure gauges", see Technical information IN 00.05.</p>
<b>Nominal size (NS)</b>	<ul style="list-style-type: none"> <li>■ Ø 63 mm [2 ½"]</li> <li>■ Ø 100 mm [4"]</li> <li>■ Ø 160 mm [6"]</li> </ul>
<b>Window</b>	Laminated safety glass (NS 63 [2 ½"]: Polycarbonate)
<b>Case</b>	<p>Safety level "S1" per EN 837-1</p> <p>Stainless steel, with blow-out device at case circumference, 12 o'clock (NS 63 [2 ½"]) and on the back of the case (NS 100 [4"] and 160 [6"])</p> <p>Scale ranges ≤ 0 ... 16 bar [≤ 0 ... 300 psi] with compensating valve to vent and reseal case</p>
<b>Ring</b>	Bayonet ring, stainless steel
<b>Mounting</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Panel mounting flange, stainless steel</li> <li>■ Panel mounting flange, polished stainless steel</li> <li>■ Triangular profile ring, stainless steel polished with mounting bracket</li> <li>■ Surface mounting flange, stainless steel</li> </ul>
<b>Case filling (model 233.50)</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Glycerine</li> <li>■ Glycerine-water mixture for NS 100 [4"] and 160 [6"] with scale range ≤ 0 ... 2.5 bar [≤ 0 ... 40 psi] or for NS 63 [2 ½"] with scale range ≤ 0 ... 4 bar [≤ 0 ... 60 psi]</li> <li>■ Silicone oil</li> </ul>

Measuring element	
<b>Type of measuring element</b>	Bourdon tube, C-type or helical type
<b>Material</b>	<ul style="list-style-type: none"> <li>■ Stainless steel 316L</li> <li>■ Monel (models 262.50 and 263.50)</li> </ul>
<b>Leak tightness</b>	<ul style="list-style-type: none"> <li>■ Helium tested, leakage rate: &lt; 5 · 10<sup>-3</sup> mbar l/s</li> <li>■ Helium tested, leakage rate: &lt; 1 · 10<sup>-6</sup> mbar l/s</li> </ul>

Accuracy specifications		
<b>Accuracy class</b>		
NS 63 [2 ½"]	■ EN 837-1	Class 1.6
	■ ASME B40.100	±2 ½ % of measuring span (grade A)
NS 100 [4"], 160 [6"]	■ EN 837-1	Class 1.0
	■ ASME B40.100	±1.0 % of measuring span (grade 1A)
<b>Temperature error</b>	On deviation from the reference conditions at the measuring system: ≤ ±0.4 % per 10 °C [≤ ±0.4 % per 18 °F] of full scale value	
<b>Reference conditions</b>		
Ambient temperature	+20 °C [68 °F]	

## Scale ranges

Scale range	
bar	kg/cm <sup>2</sup>
0 ... 0.6	0 ... 0.6
0 ... 1	0 ... 1
0 ... 1.6	0 ... 1.6
0 ... 2.5	0 ... 2.5
0 ... 4	0 ... 4
0 ... 6	0 ... 6
0 ... 10	0 ... 10
0 ... 16	0 ... 16
0 ... 25	0 ... 25
0 ... 40	0 ... 40
0 ... 60	0 ... 60
0 ... 100	0 ... 100
0 ... 160	0 ... 160
0 ... 250	0 ... 250
0 ... 400	0 ... 400
0 ... 600	0 ... 600
0 ... 1,000	0 ... 1,000
0 ... 1,600	0 ... 1,600
kPa	MPa
0 ... 100	0 ... 0.1
0 ... 160	0 ... 0.16
0 ... 250	0 ... 0.25
0 ... 400	0 ... 0.4
0 ... 600	0 ... 0.6
0 ... 1,000	0 ... 1
0 ... 1,600	0 ... 1.6
0 ... 250	0 ... 2.5
0 ... 400	0 ... 4
0 ... 600	0 ... 6
0 ... 1,000	0 ... 10
0 ... 1,600	0 ... 16
0 ... 2,500	0 ... 25
0 ... 4,000	0 ... 40
0 ... 6,000	0 ... 60
0 ... 10,000	0 ... 100
0 ... 16,000	0 ... 160

Scale range	
psi	psi
0 ... 10	0 ... 1,000
0 ... 15	0 ... 1,500
0 ... 30	0 ... 2,000
0 ... 60	0 ... 3,000
0 ... 100	0 ... 4,000
0 ... 160	0 ... 5,000
0 ... 200	0 ... 6,000
0 ... 300	0 ... 7,500
0 ... 400	0 ... 10,000
0 ... 600	0 ... 20,000
0 ... 800	

## Vacuum and +/- scale ranges

Scale range	
bar	MPa
-0.6 ... 0	-0.06 ... 0
-1 ... 0	-0.1 ... 0
-1 ... +0.6	-0.1 ... +0.06
-1 ... +1.5	-0.1 ... +0.15
-1 ... +3	-0.1 ... +0.3
-1 ... +5	-0.1 ... +0.5
-1 ... +9	-0.1 ... +0.9
-1 ... +15	-0.1 ... +1.5
-1 ... +24	-0.1 ... +2.4
kPa	psi
-60 ... 0	-30 inHg ... 0
-100 ... 0	-30 inHg ... +15
-100 ... +60	-30 inHg ... +30
-100 ... +150	-30 inHg ... +60
-100 ... +300	-30 inHg ... +100
-100 ... +500	-30 inHg ... +160
-100 ... +900	-30 inHg ... +200
-100 ... +1,500	-30 inHg ... +300
-100 ... +2,400	

## Further information on: Scale ranges

### Special scale ranges

#### Unit

Other scale ranges on request

- bar
- psi
- kg/cm<sup>2</sup>
- kPa
- MPa

## Further information on: Scale ranges

### Dial

Scale colour	Black
Material	Aluminium
Special scale	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ With temperature scale for refrigerant, e.g. for NH3: R 717</li> </ul> Other scales on request
Pointer	Aluminium, black

### Process connections

Standard	<ul style="list-style-type: none"> <li>■ ISO 1179-2</li> <li>■ ISO 7</li> <li>■ ANSI/B1.20.1</li> </ul>
<b>Size</b>	
ISO 1179-2	<ul style="list-style-type: none"> <li>■ G 1/8 B, male thread</li> <li>■ G 1/4 B, male thread</li> <li>■ G 1/2 B, male thread</li> <li>■ M12 x 1.5, male thread</li> <li>■ M20 x 1.5, male thread</li> </ul>
ISO 7	<ul style="list-style-type: none"> <li>■ R 1/4, male thread</li> <li>■ R 1/2, male thread</li> </ul>
ANSI/B1.20.1	<ul style="list-style-type: none"> <li>■ 1/4 NPT, male thread</li> <li>■ 1/2 NPT, male thread</li> </ul>
<b>Materials (wetted)</b>	
Process connection	<ul style="list-style-type: none"> <li>■ NS 100 [4"], 160 [6"]: Stainless steel 316L</li> <li>■ NS 63 [2 1/2"]: 316 Ti</li> <li>■ Monel (models 262.50 and 263.50)</li> </ul>
Bourdon tube	<ul style="list-style-type: none"> <li>■ Stainless steel 316L</li> <li>■ Monel (models 262.50 and 263.50)</li> </ul>

Other process connections on request

### Operating conditions

#### Medium temperature

Unfilled instruments	-40 ... +200 °C [-40 ... +392 °F]
Instruments with glycerine filling	-20 ... +100 °C [-4 ... +212 °F]
Instruments with silicone oil filling	-40 ... +100 °C [-40 ... +212 °F]

#### Ambient temperature

Unfilled instruments or with silicone oil filling	-40 ... +60 °C [-40 ... +140 °F]
Instruments with glycerine filling	-20 ... +60 °C [-4 ... +140 °F]

#### Pressure limitation


NS 63 [2 1/2"]	Steady	3/4 x full scale value
	Fluctuating	2/3 x full scale value
	Short time	Full scale value
NS 100 [4"], 160 [6"]	Steady	Full scale value
	Fluctuating	0.9 x full scale value
	Short time	1.3 x full scale value

#### Ingress protection per IEC/EN 60529










- IP65
- IP66 (only selectable for scale ranges from 0 ... 20 bar [ 0 ... 400 psi])

## Approvals

### Approvals included in the scope of delivery

Logo	Description	Country
	<b>EU declaration of conformity</b> Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...) For scale ranges ≤ 1,000 bar	Canada

### Optional approvals

Logo	Description	Country
	<b>EU declaration of conformity</b>	European Union
	ATEX directive Hazardous areas - Ex h Gas [IIC T6 ... T1 Gb X] Dust [IIIC T85° ... T450°C Db X]	
	<b>EAC</b> Hazardous areas	Eurasian Economic Community
	<b>GOST</b> Metrology, measurement technology	Russia
	<b>KazInMetr</b> Metrology, measurement technology	Kazakhstan
-	<b>MTSCHS</b> Permission for commissioning	Kazakhstan
	<b>BelGIM</b> Metrology, measurement technology	Belarus
	<b>UkrSEPRO</b> Metrology, measurement technology	Ukraine
	<b>Uzstandard</b> Metrology, measurement technology	Uzbekistan
-	<b>CPA</b> Metrology, measurement technology	China
	<b>DNV GL</b> Ships, shipbuilding (e.g. offshore)	International

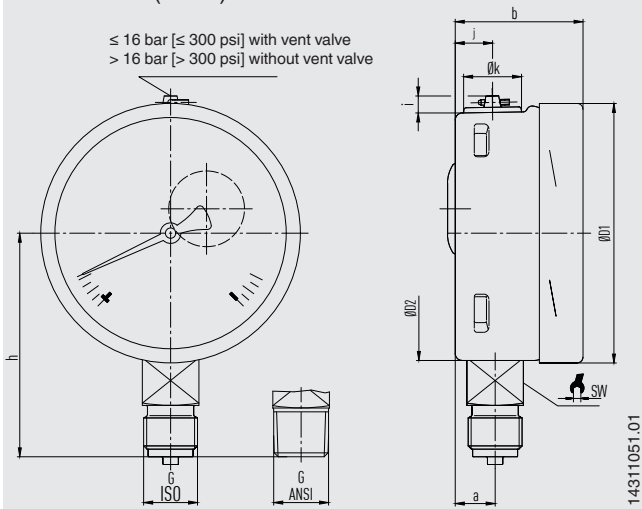
## Certificates (option)

Certificates	
<b>Certificates</b>	<ul style="list-style-type: none"> <li>■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy)</li> <li>■ 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)</li> </ul>
<b>Recommended recalibration interval</b>	1 year (dependent on conditions of use)

→ Approvals and certificates, see website

## Dimensions in mm [in]

### Lower mount (radial)



### Process connection with thread per ISO 1179-2

NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	G ¼ B	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G ⅝ B	51 [2.01]								
	M12 x 1.5	54 [2.13]								
100 [4"]	G ¼ B	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	87 [3.43]								
	M12 x 1.5	80 [3.15]								
	M20 x 1.5	87 [3.43]								
160 [6"]	G ¼ B	111 [4.37]	15.5 [0.61]	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	118 [4.65]								
	M12 x 1.5	111 [4.37]								
	M20 x 1.5	118 [4.65]								

### Process connection with thread per ISO 7

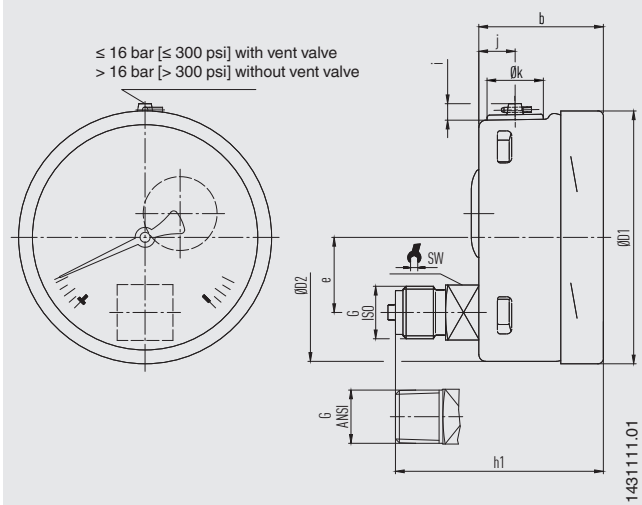
NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	R ¼	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	86 [3.39]								
160 [6"]	R ¼	111 [4.37]	15.5 [0.61]	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	117 [4.60]								

### Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		h ±1	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	¼ NPT	54 [2.13]	9.5 [0.37]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	⅝ NPT	51 [2.01]								
100 [4"]	¼ NPT	80 [3.15]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	86 [3.39]								
160 [6"]	¼ NPT	111 [4.37]	15.5 [0.61]	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	117 [4.60]								

<sup>1)</sup> Plus 16 mm [0.630 in] with scale range 0 ... 1,600 bar [0 ... 20,000 psi]

### Lower back mount



### Process connection with thread per ISO 1179-2

NS	G	Dimensions in mm [in]								
		h ±1	b	D1	D2	e	i	y	k	SW
63 [2 ½"]	G ¼ B	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G ⅝ B	54 [2.13]								
	M12 x 1.5	57 [2.24]								
100 [4"]	G ¼ B	76 [2.99]	49.5 [1.95]	101 [3.98]	99 [3.90]	30 [1.18]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	83 [3.27]								
	M12 x 1.5	76 [2.99]								
	M20 x 1.5	83 [3.27]								
160 [6"]	G ¼ B	76 [2.99] <sup>2)</sup>	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	G ½ B	83 [3.27] <sup>2)</sup>								
	M12 x 1.5	76 [2.99] <sup>2)</sup>								
	M20 x 1.5	83 [3.27] <sup>2)</sup>								

### Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]								
		h ±1	b	D1	D2	e	i	y	k	SW
63 [2 ½"]	R ¼	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	76 [2.99]	49.5 [1.95]	101 [3.98]	99 [3.90]	30 [1.181]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	82 [3.23]								
160 [6"]	R ¼	76 [2.99] <sup>2)</sup>	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	R ½	82 [3.23] <sup>2)</sup>								

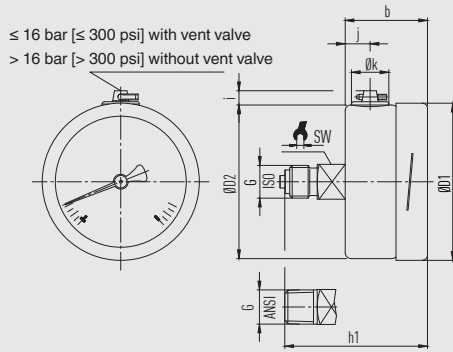
### Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		h ±1	b	D1	D2	e	i	y	k	SW
63 [2 ½"]	¼ NPT	54 [2.13]	33 [1.30]	63 [2.48]	62 [2.44]	50 [1.97]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	⅝ NPT	51 [2.01]								
100 [4"]	¼ NPT	80 [3.15]	49.5 [1.95]	101 [3.98]	99 [3.90]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	86 [3.39]								
160 [6"]	¼ NPT	76 [2.99] <sup>2)</sup>	49.5 [1.95] <sup>1)</sup>	161 [6.34]	159 [6.26]	50 [1.97]	6.5 [0.26]	14.5 [0.57]	22.5 [0.89]	22 [0.87]
	½ NPT	82 [3.23] <sup>2)</sup>								

1) Plus 16 mm [0.630 in] with scale range 0 ... 1,600 bar [0 ... 20,000 psi]

2) Plus 16 mm [0.630 in] with scale ranges ≥ 0 ... 100 bar [≥ 0 ... 1,500 psi]

NS 63 [2 1/2"], centre back mount



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Process connection with thread per ISO 1179-2

NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	y	k	SW
63 [2 1/2"]	G 1/4 B	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	G 1/8 B	54 [2.13]							
	M12 x 1.5	57 [2.24]							

Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	y	k	SW
63 [2 1/2"]	R 1/4	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

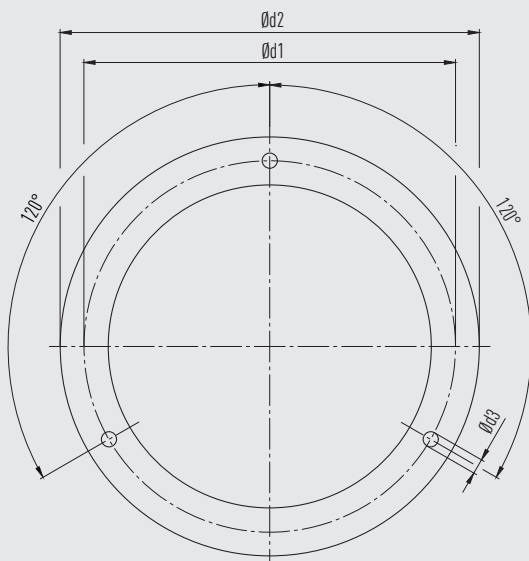
NS	G	Dimensions in mm [in]							
		h ±1	b	D1	D2	i	y	k	SW
63 [2 1/2"]	1/4 NPT	57 [2.24]	33 [1.30]	63 [2.48]	62 [2.44]	6 [0.24]	10 [0.39]	15 [0.59]	14 [0.55]
	1/8 NPT	54 [2.13]							



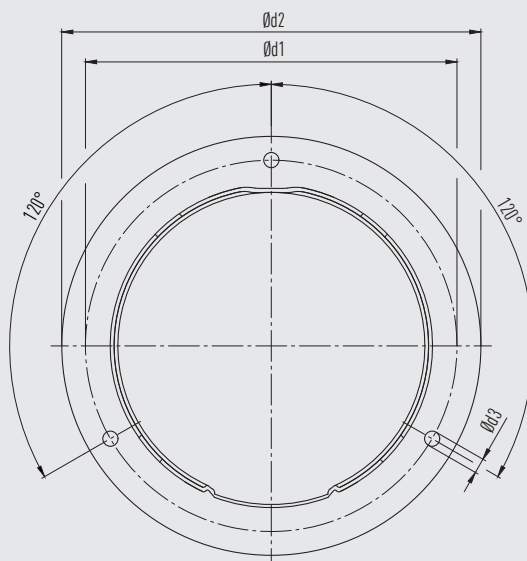
## Accessories

### Dimensions in mm [in]

Panel mounting flange

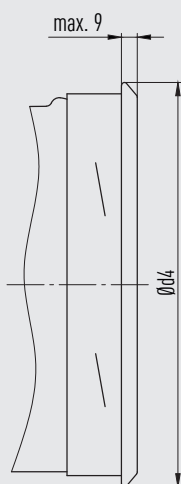


Surface mounting flange







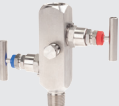



NS	Dimensions in mm [in]			
	Recommended panel cutout	d1	d2	d3
63 [2 ½"]	Ø 67 ±0.3 / Ø 2.6 [Ø 2.64 ±0.01 / Ø 0.10]	75 [2.95]	85 [3.35]	3.6 [0.14]
100 [4"]	Ø 104 ±0.5 / Ø 4.1 [Ø 4.04 ±0.02 / Ø 0.16]	117 [4.61]	132 [5.20]	4.8 [0.19]
160 [6"]	Ø 164 ±0.5 / Ø 6.5 [Ø 6.46 ±0.02 / Ø 0.26]	178 [7.01]	196 [7.71]	5.8 [0.23]

Triangular profile ring



NS	Dimensions in mm [in]	
	Recommended panel cutout	d4
63 [2 ½"]	Ø 64.5 ±0.5 / Ø 2.5 [Ø 2.54 ±0.02 / Ø 0.01]	≤ 69 [2.72]
NS 100 [4"]	Ø 102 ±1.0 / Ø 4.0 [Ø 4.02 ±0.04 / Ø 0.16]	≤ 108 [4.25]
NS 160 [6"]	Ø 162.6 ±1.0 / Ø 6.4 [Ø 6.40 ±0.04 / Ø 0.25]	≤ 168 [6.61]

## Accessories and spare parts

Model	Description
	<b>910.17</b> Sealings → see data sheet AC 09.08
	<b>910.15</b> Syphons → see data sheet AC 09.06
	<b>910.13</b> Overpressure protector → see data sheet AC 09.04
	<b>IV10, IV11</b> Needle valve and multiport valve → see data sheet AC 09.22
	<b>IV20, IV21</b> Block-and-bleed valve → see data sheet AC 09.19
	<b>IVM</b> Monoflange, process and instrument version → see data sheet AC 09.17
	<b>BV</b> Ball valve, process and instrument version → see data sheet AC 09.28
	<b>IBF2, IBF3</b> Monoblock with flange connection → see data sheet AC 09.25

### Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

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# Bourdon tube pressure gauge, copper alloy Panel mounting series Models 111.16 and 111.26

WIKA data sheet PM 01.10



for further approvals  
see page 3

## Applications

- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Heating and air-conditioning technology
- Small-capacity compressors
- Drink dispensers
- Medical engineering

## Special features

- Specifically for panel mounting
- Reliable and cost-effective
- Design per EN 837-1
- Scale ranges up to 0 ... 400 bar



Fig. left: Model 111.16

Fig. right: Model 111.26

## Description

The models 111.16 and 111.26 have been specifically designed for panel mounting and therefore feature a back mount process connection.

The model 111 pressure gauges are based on the proven Bourdon tube measuring system. On pressurisation, the deflection of the Bourdon tube, proportional to the incident pressure, is transmitted to the movement via a link and indicated.

For easy installation, the plastic cases of the panel mounting series are already equipped with a mounting flange.

The model 111.16 Bourdon tube pressure gauge can be fitted to the panel by means of a mounting bracket (accessory). The model 111.26 is mounted to the panel by "snap-in mounting" using lateral locating lugs at the case. In addition, metallised front bezels can be supplied for the model 111.26.

The panel mounting series of model 111 is also available in customer-specific versions, e.g. with individual dial layout.

## Specifications

### Design

EN 837-1

### Nominal size in mm

Model 111.16: 40, 50 and 63

Model 111.26: 40, 50, 63 and 80

### Accuracy class

2.5

### Scale ranges

0 ... 0.6 to 0 ... 400 bar

or all other equivalent vacuum or combined pressure and vacuum ranges

### Pressure limitation

Steady: 3/4 x full scale value

Fluctuating: 2/3 x full scale value

Short time: Full scale value

### Permissible temperature

Ambient: -20 ... +60 °C

Medium: +60 °C maximum

### Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C): max.  $\pm 0.4 \%$ /10 K of the span

### Process connection

Copper alloy

For process connections and spanner widths see page 4

### Pressure element

Copper alloy

C-type or helical type

### Movement

Copper alloy

### Dial

NS 40, 50, 63: Plastic, white, with pointer stop pin

NS 80: Aluminium, white

### Pointer

Plastic, black

### Case

Plastic, black

### Window

Plastic, crystal-clear, snap-fitted in case

### Panel fitting

Model 111.16: ■ Panel mounting flange

■ Mounting bracket

Model 111.26: Locating lugs on the case side

NS 40, 50, 63: Triangular bezel

NS 80: Front flange

## Options

■ Other process connection

■ Accuracy class 1.6






■ Model 111.26, NS 40, 50, 63: Triangular bezel, metallised

## Special version

### For drinking water installations

Material suitability of the wetted parts in accordance with the evaluation criteria for metallic substances of the German federal environmental agency and the "4MS Common Composition List".

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> Pressure equipment directive	European Union
	<b>EAC (option)</b> Pressure equipment directive	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr (option)</b> Metrology, measurement technology	Kazakhstan
	<b>BelGIM (option)</b> Metrology, measurement technology	Belarus
-	<b>CPA</b> Metrology, measurement technology	China
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

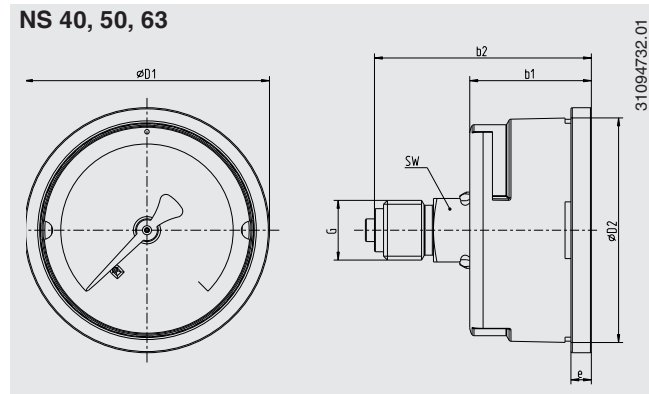
## Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

## Dimensions in mm

### Model 111.16

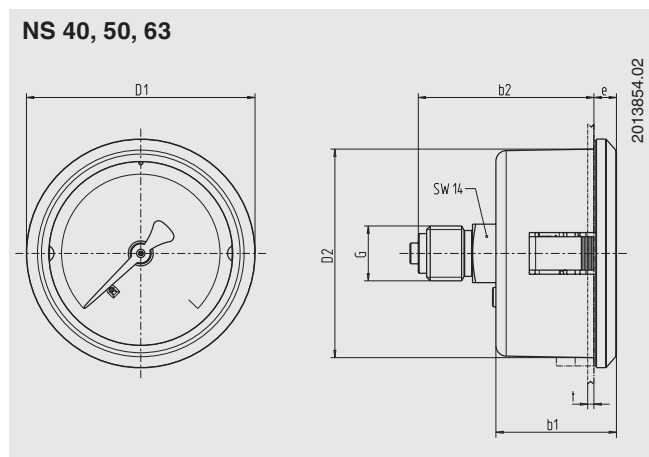
NS 40, 50, 63



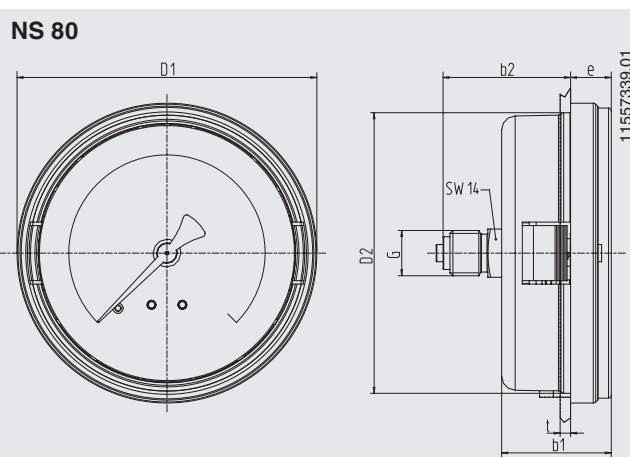
NS	Dimensions in mm							Weight in kg
	$b1 \pm 0.5$	$b2 \pm 1$	$D1$	$D2$	G	SW	e	
40	26.5	44.5	45	40	G 1/8 B	14	4.5	0.06
50	26.5	47.5	54	49.5	G 1/4 B	14	4.5	0.07
63	29.5	47.5	68	63	G 1/4 B	14	5	0.08

### Model 111.26

NS 40, 50, 63



NS 80



NS	Dimensions in mm							Panel cutout		Weight in kg
	$b1 \pm 0.5$	$b2 \pm 1$	$D1$	$D2$	G	SW	e	$\varnothing$	t	
40	29	39	44	40	G 1/8 B	14	5.5	40.5	1.0 ... 2.5	0.06
50	29	42	55	50	G 1/4 B	14	5.5	50.5	1.0 ... 2.5	0.07
63	29	42	68	63	G 1/4 B	14	5.5	63.5	1.0 ... 2.5	0.08
80	32	37	87	81.5	G 1/4 B	14	12	82	1.5 ... 3.5	0.12

## Ordering information

Model / Nominal size / Scale range / Process connection / Options

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# Bourdon Tube Pressure Gauge Type 111.10, Black Plastic or Painted Steel Case Standard Series - Lower Mount

WIKA Datasheet 111.10

## Applications

- Hydraulic and pneumatic systems
- Pumps, compressors, water systems, regulators
- Suitable for fluid medium which does not clog connection port or corrode copper alloy

## Product features

- Copper alloy wetted parts
- Black plastic or painted steel case
- Lower mount (LM) process connection

## Specifications

### Design

EN837-1 and ASME B40.100

### Sizes (All sizes not stocked)

1½", 2", 2½" and 4" (40, 50, 63, and 100 mm)

### Accuracy class

± 3/2/3% of span (ASME B40.100 Grade B)

### Ranges (All ranges not stocked)

Vacuum/Compound to 30 "Hg (-1 bar) / 0/ 200 psi (16 bar)

Pressure from 15 psi (1 bar) to 6,000 psi (400 bar)

or other equivalent units of pressure or vacuum

Receiver scales 3...15 psi (0.2 ... 1 bar)

### Working pressure

Steady: 3/4 of full scale value

Fluctuating: 2/3 of full scale value

Short time: full scale value

### Operating temperature

Ambient: -40°F to 140°F (-40°C to 60°C)

Media: 140°F (+60°C) maximum

### Temperature error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.



Bourdon Tube Pressure Gauge Type 111.10

### Pressure connection

Material: copper alloy

Lower mount (LM)

1/8" or 1/4" NPT

### Bourdon Tube

Material: copper alloy

≤ 870 psi (60 bar): C-shape

> 870 psi (60 bar): Helical

### Movement

Copper alloy

### Dial

White plastic with stop pin (1½", 2", 2½")

White aluminum with stop pin (4")

Black or black and red lettering

### Pointer

Black ABS plastic (1½", 2", 2½" LM)

Black aluminum (4" LM)

### Case

Black plastic

### Window

Crystal-clear plastic, snap-fit

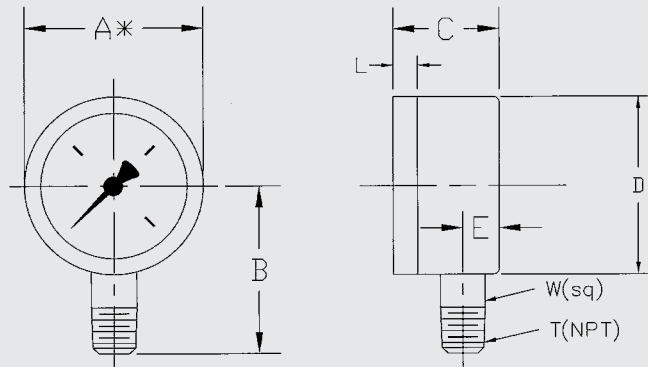


## Optional Extras

- Accuracy  $\pm 2/1/2\%$  of span (ASME B40.100 Grade A)
- Slip-fit or friction ring
- Case with blowout plug
- Glass window (requires slip-fit or friction ring)
- Black painted steel case
- Stainless steel case
- Brass polished case and friction ring (2½" only)
- Special case colors
- Special connections (limited to wrench flat area)
- Cleaned for oxygen service
- Nickel plated connection
- Medical specification
- Rubber cover (2", 2½")
- Custom dial layout
- Other pressure scales available:  
bar, kPa, MPa, kg/cm<sup>2</sup> and dual scales
- EN standards
- Red set pointer on aluminum dial or on snap-on window
- External adjust red drag pointer  
(black steel - 2½" case only)

Note: <sup>1</sup>Press-fit brass restrictor standard for 111.10B, 1,000 psi to 6,000 psi

## Dimensions



### Type 111.10

Size		A	B	C	D	E	L	T	W
1.5"	mm	40	36	26	39	9.6	3.2		14
	in	1.50	1.42	1.02	1.54	0.38	0.13	1/8"	0.55
2"	mm	50	45	27	49	10	3.3		14
	in	1.97	1.77	1.06	1.93	0.39	0.13	1/4"	0.55
2.5"	mm	63	53.5	28	61.5	10	3.4		14
	in	2.48	2.11	1.10	2.42	0.39	0.14	1/4"	0.55
4"	mm	100	83.5	30	99	11.5	3.8		14
	in	3.94	3.29	1.18	3.9	0.45	0.15	1/4"	0.55

### Type 111.10B (brass case version)

Size		A	B	C	D	E	L	T	W
2.5"	mm	63	52	27	61.5	9.5	10		14
	in	2.48	2.05	1.06	2.42	0.37	0.39	1/4"	0.55

#### Ordering information

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required  
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# Bourdon Tube Pressure Gauge Type 111.12, Black Plastic or Painted Steel Case Standard Series - Center Back Mount

WIKA Datasheet 111.12

## Applications

- Hydraulic and pneumatic systems
- Pumps, compressors, water systems, regulators
- Suitable for fluid medium which does not clog connection port or corrode copper alloy

## Product features

- Copper alloy wetted parts
- Black plastic or painted steel case
- Center back mount (CBM) process connection



## Specifications

### Design

EN 837-1 & ASME B40.100

### Sizes (All sizes not stocked)

1½", 2", 2½" and 4" (40, 50, 63, and 100 mm)  
3½" (94 mm) with u-clamp only

### Accuracy class

± 3/2/3% of span (ASME B40.100 Grade B)

### Ranges (All ranges not stocked)

Vacuum/Compound to 30"Hg (-1 bar) / 0/ 200 psi (16 bar)  
Pressure from 15 psi (1 bar) to 6,000 psi (400 bar)  
or other equivalent units of pressure or vacuum  
Receiver scales 3...15 psi (0.2 ... 1 bar)

### Working pressure

Steady: 3/4 of full scale value  
Fluctuating: 2/3 of full scale value  
Short time: full scale value

### Operating temperature

Ambient: -40°F to 140°F (-40°C to 60°C)  
Media: 140°F (+60°C) maximum

### Temperature error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.

## Bourdon Tube Pressure Gauge Type 111.12

### Pressure connection

Material: copper alloy  
Center back mount (CBM)  
1/8" or 1/4" NPT

### Bourdon Tube

Material: copper alloy  
≤ 870 psi (60 bar): C-shape  
> 870 psi (60 bar): Helical

### Movement

Copper alloy

### Dial

White plastic with stop pin (1½", 2", 2½")  
White aluminum with stop pin (3½" & 4")  
Black or black and red lettering

### Pointer

Black ABS plastic (1½", 2", 2½")  
Black aluminum (3½" & 4")

### Case

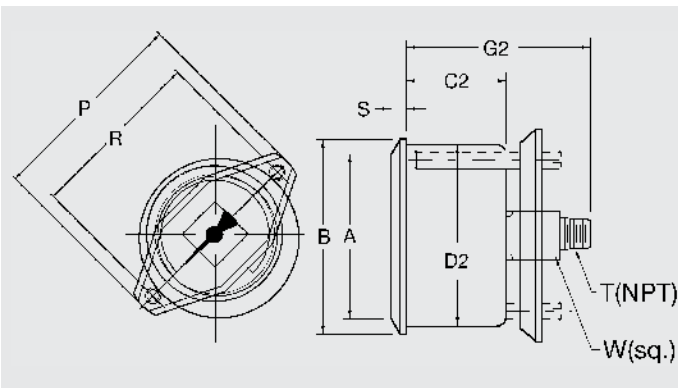
Black plastic (1½", 2", 2½", & 4")  
Black-painted steel (3½")

### Window

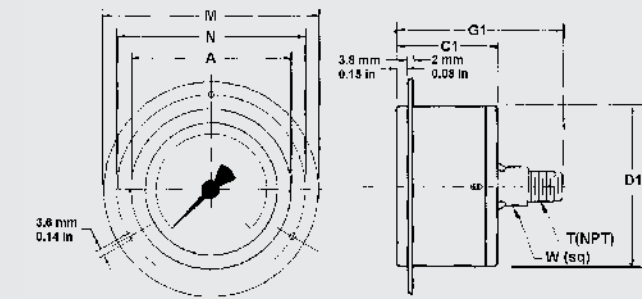
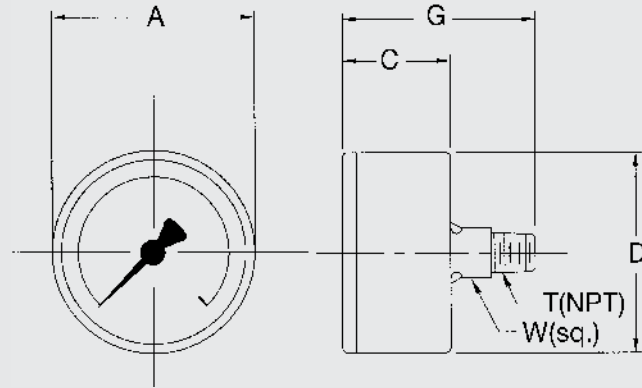
Crystal-clear plastic, snap-fit (1½", 2", 2½", & 4")  
Crystal-clear plastic, threaded (3½")

## Optional Extras

- Accuracy  $\pm 2/1/2\%$  of span (ASME B40.100 Grade A)
- U-clamp panel mounting
- Front flange
- Slip-fit or friction ring
- Case with weep hole
- Glass window (requires slip-fit or profile ring)
- Black painted steel case
- Stainless steel case
- Special case colors
- Special connections (limited to wrench flat area)
- Cleaned for oxygen service
- Nickel plated connection
- Medical specification
- Rubber cover (2", 2½")
- Custom dial layout
- Other pressure scales available:  
bar, kPa, MPa, kg/cm<sup>2</sup> and dual scales
- EN standards
- Red set pointer on aluminum dial or on snap-on window
- External adjust red drag pointer  
(black steel - 2½" case only)



## Dimensions



Recommended panel cutout is D, D1 or D2 + 1.5 mm (0.04in.)

Size		(Standard Version)															Weight <sup>2</sup>
		A	B <sup>1</sup>	C	C1	C2	D	D1	D2	G	G2	M	N	P	R	T	
1.5"	mm	40	43.21	26	-	24	41	-	40	46.5	45	-	-	59	47		14
	in	1.57	1.7	1.02	-	0.94	1.61	-	1.57	1.83	1.77	-	-	2.32	1.85	1/8"	0.55
2"	mm	50	54	26.5	28.5	24	49	55	49	47	47	71	60	70	57		14
	in	1.97	2.12	1.04	1.12	0.94	1.93	2.17	1.93	1.85	1.85	2.80	2.36	2.76	2.24	1/4"	0.55
2.5"	mm	63	67.18	27.5	29.5	26	61.5	68	62	48	53	85	75	91	78		14
	in	2.48	2.6	1.08	1.16	1.02	2.42	2.68	2.44	1.89	2.09	3.35	2.95	3.58	3.07	1/4"	0.55
3.5"	mm	80	99.3	-	-	36	-	-	93	-	57	-	-	-	-		14
	in	3.15	3.9	-	-	1.42	-	-	3.66	-	2.24	-	-	-	-	1/4"	0.55
4"	mm	100	-	31	-	-	99	-	-	49	-	-	-	-	-		14
	in	3.94	-	1.22	-	-	3.9	-	-	1.93	-	-	-	-	-	1/4"	0.55

<sup>1</sup>B dimension: outside dimension of profile ring.

<sup>2</sup> Weight is for base gauge without optional accessories.

### Ordering information

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required  
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# Bourdon Tube Pressure Gauges Stainless Steel Series Model 131.11

WIKA Data Sheet PM 01.05

## Applications

- Suitable for corrosive environments and gaseous or liquid media that will not obstruct the pressure system
- CDA (Clean Dry Air) applications
- Indication of failure alarm on gas bottles
- Mechanical engineering and plant construction

## Special Features

- All stainless steel construction
- Cost effective and reliable
- Compatible with alarm contacts (50 mm)
- Scale ranges up to 0 ... 1000 bar



Bourdon Tube Pressure Gauge Model 131.11.50 with 2nd scale psi

## Description

### Design

EN 837-1

### Nominal size

40, 50 and 63 mm

### Accuracy class

2.5

### Scale ranges

40 and 50 mm: 0 ... 1 to 0 ... 600 bar  
63 mm: 0 ... 1 to 0 ... 1000 bar  
or other equivalent units of pressure or vacuum

### Working pressure

Steady:  $\frac{3}{4}$  of full scale value

Fluctuating:  $\frac{2}{3}$  of full scale value

Short time: full scale value

### Operating temperature

Ambient: -40 ... +60 °C

Medium: +100 °C maximum

### Temperature effect

When temperature of the pressure element deviates from reference temperature (+20 °C):  
max.  $\pm 0.4$  %/10 K of true scale value

## Standard features

### Pressure connection

Material: stainless steel  
Lower mount (LM) or centre back mount (CBM)  
G ¼ B (male), 14 mm flats

### Pressure element

Material: stainless steel  
< 100 bar: C-type  
≥ 100 bar: helical type

### Movement

Stainless steel

### Dial

White aluminium with black lettering, with pointer stop pin

### Pointer

Black aluminium

### Case

Natural finish stainless steel

### Window

Polycarbonate, snap-fit window

## Special versions

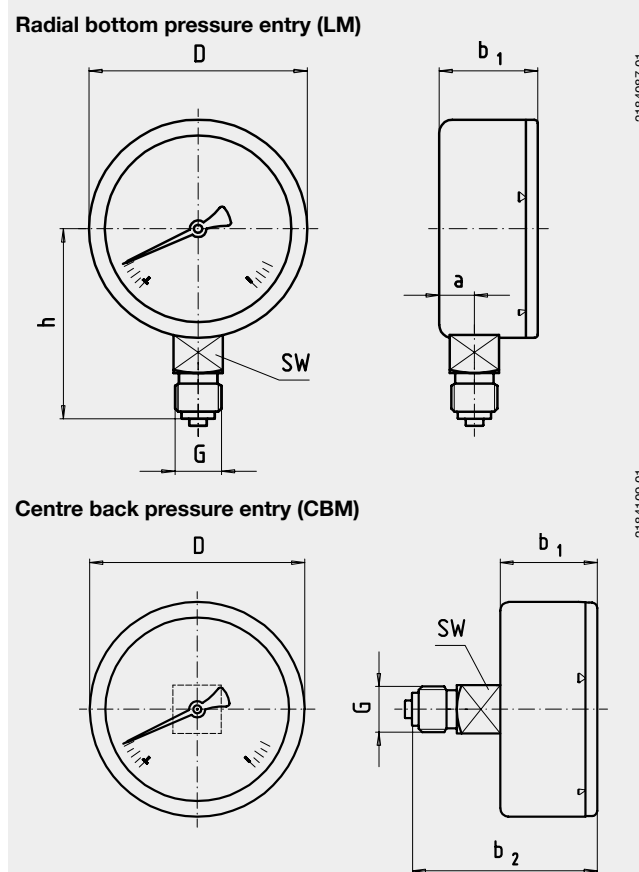
### Ammonia gauges (63 mm)

Scale in °C for refrigerant R 717 (NH<sub>3</sub>),  
Pressure ranges: -1 ... 0 ... 15 bar or -1 ... 0 ... 26 bar

## Optional extras

- Other pressure connection
- Assembly on diaphragm seals see product review DS
- Slip-on bezel, stainless steel, polished, with instrument glass window
- 3-hole panel mounting flange, stainless steel, polished
- 3-hole surface mounting flange, stainless steel (63 mm only)
- Triangular bezel, stainless steel, polished, with clamp (only centre back mount)
- Alarm contacts (50 mm, see data sheet SP 01.03)

## Standard version



## Dimensions in mm

NS	Dimensions in mm							Weight in kg
	a	b <sub>1</sub>	b <sub>2</sub> ± 1	D	G	h ± 1	SW	
40	9	25	52.5	39	G ¼ B	39	14	0.05
50	9.6	27	53.5	49	G ¼ B	47	14	0.09
63	10	28	53.5	62	G ¼ B	54	14	0.12

Standard pressure entry with parallel thread and sealing to EN 837-1 / 7.3

## Ordering information

Pressure gauge model / Nominal size / Scale range / Size and location of connection / Optional extras required

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Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.



# Bourdon tube pressure gauge Model 213.53, liquid filling, stainless steel case

WIKA data sheet PM 02.12



## Applications

- For measuring points with high dynamic pressure loads or vibrations
- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Hydraulics
- Compressors, shipbuilding

## Special features

- Vibration and shock resistant
- Especially sturdy design
- NS 63 and 100 with German Lloyd and Gosstandart approval
- Scale ranges up to 0 ... 1000 bar



Bourdon tube pressure gauge, model 213.53.100,  
lower mount

## Description

### Design

EN 837-1

### Nominal size in mm

50, 63, 100

### Accuracy class

NS 50, 63: 1.6

NS 100: 1.0

### Scale ranges

NS 50: 0 ... 1 to 0 ... 400 bar

NS 63, 100: 0 ... 0.6 to 0 ... 1000 bar

or all other equivalent vacuum or combined pressure and vacuum ranges

### Pressure limitation

NS 50, 63: Steady: 3/4 x full scale value

Fluctuating: 2/3 x full scale value

Short time: Full scale value

NS 100: Steady: Full scale value

Fluctuating: 0.9 x full scale value

Short time: 1.3 x full scale value

### Permissible temperature

Ambient: -20 ... +60 °C

Medium: +60 °C maximum

### Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C):

Max. ±0.4 %/10 K of the span

### Ingress protection

IP 65 per EN 60529 / IEC 529

## Process connection

Cu-alloy,  
lower mount (LM) or back mount (BM),  
NS 50, 63: G ¼ B (male), 14 mm flats  
NS 100: G ½ B (male), 22 mm flats

## Pressure element

NS 50, 63:  
< 60 bar: Cu-alloy, C-type  
≥ 60 bar: Cu-alloy, helical type  
NS 100:  
< 100 bar: Cu-alloy, C-type  
≥ 100 bar: Stainless steel 316L, helical type

## Movement

Cu-alloy

## Dial

NS 50, 63: Plastic ABS, white, with pointer stop pin  
NS 100: Aluminium, white, black lettering

## Pointer

NS 50, 63: Plastic, black  
NS 100: Aluminium, black

## Window

Plastic, crystal-clear

## Case

Natural finish stainless steel, with pressure relief at case circumference, 12 o'clock.  
O-ring seal between case and connection.  
Scale ranges ≤ 0 ... 16 bar with compensating valve to vent case.

## Bezel ring

Crimp ring, glossy finish stainless steel, triangular bezel

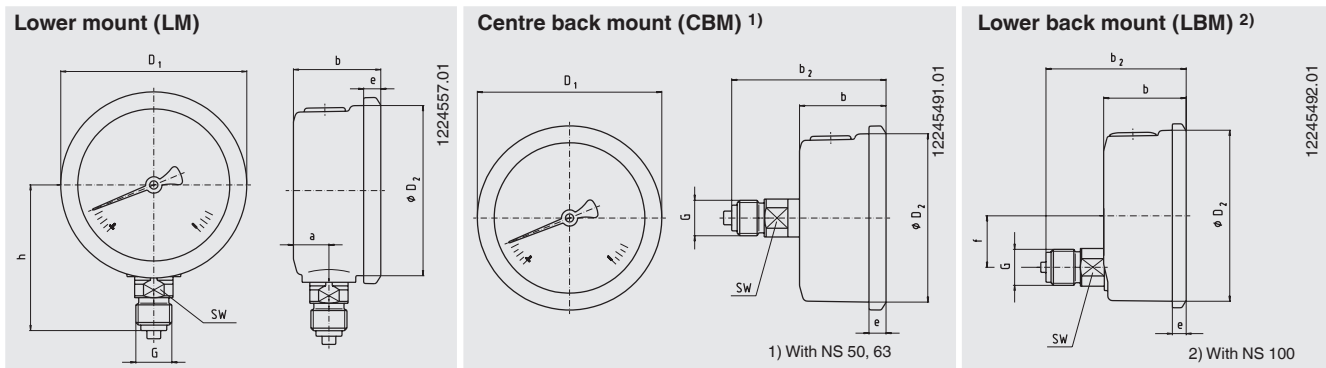
## Filling liquid

Glycerine 99.7 %

## Options

- Measuring system and movement from stainless steel (model 233.53)
- NS 100: Zero adjustment (in front)
- Increased medium temperature with special soft solder
  - NS 50, 63: 100 °C
  - NS 100: 150 °C
- Ambient temperature resistant -40 ... +60 °C with silicone oil filling
- Panel mounting flange, stainless steel, for back connection
- Surface mounting flange, stainless steel (not NS 50)
- Mounting clamp (for back connection)

## Dimensions in mm



NS	Dimensions in mm										Weight in kg
	a	b ± 0.5	b <sub>2</sub> ± 0.5	D <sub>1</sub>	D <sub>2</sub>	e	f	G	h ± 1	SW	
50	12	30	55	55	50	5.5	-	G ¼ B	48	14	0.15
63	13	32	56	68	62	6.5	-	G ¼ B	54	14	0.21
100	15.5	48	81.5	107	100	8	30	G ½ B	87	22	0.80

Process connection per EN 837-1 / 7.3

## Ordering information

Model / Nominal size / Scale range / Connection size / Connection location / Options

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# Capsule pressure gauge, stainless steel

## For the process industry

### Models 632.50, 633.50, NS 63, 100, 160

WIKA data sheet PM 06.03



for further approvals  
see page 3

### Applications

- With liquid-filled case for applications with high dynamic pressure loads or vibrations (model 633.50)
- For gaseous, dry and aggressive media, also in aggressive environments
- Process industry: Chemical, petrochemical, pharmaceutical, biotechnology, machine and power generation industries

### Special features

- Zero point correction in front
- Completely from stainless steel
- Special connection location on request
- Low scale ranges from 0 ... 2.5 mbar



Capsule pressure gauge model 632.50

### Description

The model 632.50 capsule pressure gauges are completely manufactured from stainless steel and are therefore particularly suited for applications in the process industry. They are based upon the proven capsule measuring system. On pressurisation, the expansion of the capsule element, proportional to the incident pressure, is transmitted to the movement and indicated.

The modular design enables a multitude of combinations of case materials, process connections, nominal sizes and scale ranges. Due to this high variance, the instrument is suitable for use in a wide range of applications within the process industry.

For mounting in control panels, the capsule pressure gauges can, depending on the process connection, be fitted with a mounting flange or with a triangular profile ring and mounting bracket.

The model 633.50 with liquid-filled case is suitable for high dynamic pressure loads and vibrations.



## Standard version

### Design

EN 837-3

### Nominal size in mm

63, 100, 160

### Accuracy class

1.6

### Scale ranges

NS 63: 0 ... 40 mbar to 0 ... 600 mbar

NS 100: 0 ... 16 mbar to 0 ... 600 mbar

NS 160: 0 ... 2.5 mbar to 0 ... 600 mbar

or all other equivalent vacuum or combined pressure and vacuum ranges

### Pressure limitation

Steady: Full scale value

Fluctuating: 0.9 x full scale value

### Permissible temperature

Ambient: -20 ... +60 °C

Medium: ≤ 100 °C

### Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. ±0.6 %/10 K of full scale value

### Ingress protection per IEC/EN 60529

IP54 for model 632.50 (without case filling)

IP65 for model 633.50 (with case filling)

### Process connection

Stainless steel 316L

Lower mount (radial) or lower back mount <sup>1)</sup>

NS 63: Male thread G ¼ B, SW 14

NS 100, 160: Male thread G ½ B, SW 22

### Pressure element

Stainless steel 316L

### Sealing

FPM/FKM

### Movement

Stainless steel

### Zero point setting

In front

### Dial

Aluminium, white, black lettering

### Pointer

Aluminium, black

### Case

Stainless steel

### Window

Laminated safety glass

(for case filling: Polycarbonate or clear non-splintering plastic)

### Ring

Bayonet ring, stainless steel

### Case filling <sup>1)</sup>

Glycerine-water mixture for scale ranges ≥ 60 mbar <sup>2)</sup>



<sup>1)</sup> only available for model 633.50 with NS 100, 160

<sup>2)</sup> Option accuracy class 1.0 available from ≥ 100 mbar

## Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Accuracy class 1.0 for model 632.50 and scale range ≥ 40 mbar (without fill fluid)
- Accuracy class 1.0 for model 633.50 and scale range ≥ 100 mbar (with fill fluid)
- Permissible ambient temperatures -40 ... +60 °C:  
Model 632.50: Movement wetted with Fomblin® Z03  
Model 633.50: Case filling with silicone oil
- Overload or vacuum safety with scale range:  
> 40 mbar: 10 x full scale value  
≤ 40 mbar: 3 x full scale value
- Surface mounting flange
- NS 100 and 160: Panel mounting flange
- NS 100 and 160: Triangular profile ring with clamp
- Switch contact for model 632.50.100, from scale range ≥ 100 mbar (model 831, see data sheet AC 08.01)

## Approvals

Logo	Description	Country
 	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ Pressure equipment directive</li> <li>■ ATEX directive (option) Hazardous areas Zone 1 gas II 2G Ex h IIC T6 ... T1 Gb Zone 20 dust II 2D Ex h IIIC T85°C ... T450°C Db Ignition protection type "c", constructive safety</li> </ul>	European Union
	<b>EAC (option)</b> <ul style="list-style-type: none"> <li>■ Pressure equipment directive</li> <li>■ Hazardous areas</li> </ul>	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr (option)</b> Metrology, measurement technology	Kazakhstan
-	<b>MTSCHS (option)</b> Permission for commissioning	Kazakhstan
	<b>BelGIM (option)</b> Metrology, measurement technology	Belarus
	<b>UkrSEPRO (option)</b> Metrology, measurement technology	Ukraine
	<b>Uzstandard (option)</b> Metrology, measurement technology	Uzbekistan
-	<b>CPA (option)</b> Metrology, measurement technology	China

## Certificates (option)

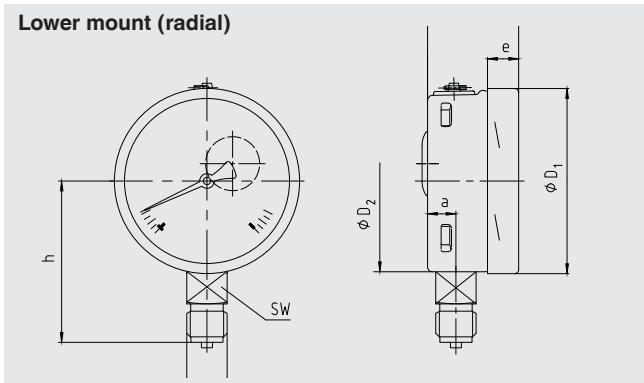
- 2.2 test report
- 3.1 inspection certificate

Approvals and certificates, see website

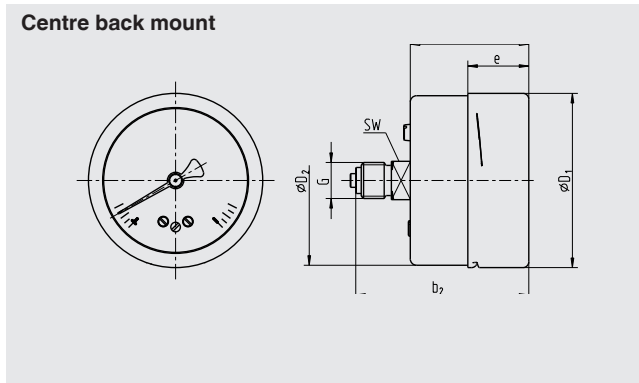
# Dimensions in mm

## Standard version

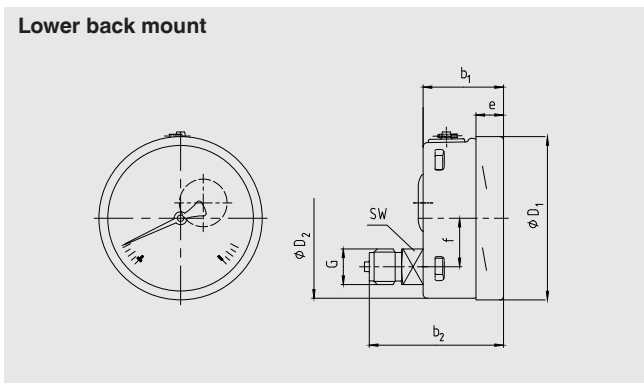
Lower mount (radial)



Centre back mount



Lower back mount



NS	Dimensions in mm											Weight in kg
	a	b	b <sub>1</sub>	b <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	e	f	G	h ±1	SW	
63	9.5	42	42	63	64	62	22	- <sup>1)</sup>	G ¼ B	52	14	0.19
100	15.5	49.5	49.5	83	101	99	17.5	30	G ½ B	87	22	0.60
160	15.5	49.5	49.5	83	161	159	17.5	50	G ½ B	118	22	1.10

Process connection per EN 837-1 / 7.3

1) With NS 63: Centre back mount process connection

## Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

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# Differential pressure gauge

## For the process industry

### Models 732.14, 762.14, high overload safety up to 40, 100 or 400 bar

WIKA data sheet PM 07.13



for further approvals  
see page 4

#### Applications

- For measuring locations with a high differential pressure overload and/or high working pressures (static pressures), also in aggressive environments
- For gaseous, liquid, contaminated, viscous and aggressive media
- Pump monitoring and control
- Filter monitoring
- Level measurement on closed vessels

#### Special features

- Differential pressure measuring ranges from -1 ... +30 bar [-14.5 ... +435 psi] to 0 ... 40 bar [0 ... 580 psi]
- High working pressure (static pressure) and high overload safety, selectable up to 40 bar [580 psi], 100 bar [1,450 psi], 250 bar [3,625 psi] or 400 bar [5,800 psi]
- The transmission fluid in the measuring chamber dampens the indicator in case of high changes of the rate of pressure
- Model 732.14: Stainless steel version  
Model 762.14: Version with special materials (Monel, Hastelloy)



Differential pressure gauge model 732.14

#### Description

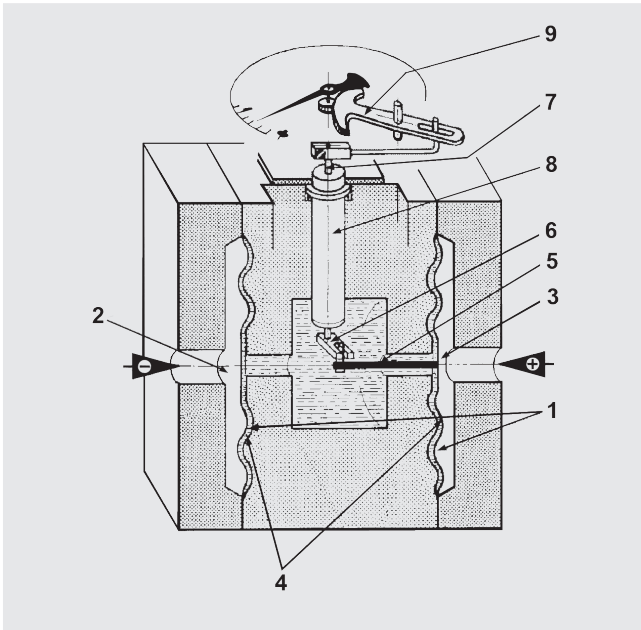
These differential pressure gauges are made of highly corrosion-resistant stainless steel. A high overload safety is achieved by the all-metal construction and the close-fitting design of the diaphragm measuring element.

The use of high-quality stainless steel materials and the robust design are geared to applications in the chemical and process engineering industries. Thus the instrument is suitable for liquid and gaseous media, also in aggressive environments.

The wetted parts for these instruments are also available in special materials such as Monel or Hastelloy.

Scale ranges of 0 ... 60 mbar bar to 0 ... 40 bar [0 ... 0.9 to 0 ... 580 psi] ensure the measuring ranges required for a wide variety of applications.

## Illustration of the principle



## Design and operating principle

- Pressures  $p_1$  and  $p_2$  act on the  $\oplus$  and  $\ominus$  side of the measuring chamber (4).
- The media chambers (1) and (2) are separated from the transmission fluid-filled measuring chamber by one diaphragm element each.
- Differential pressure across  $\oplus$  and  $\ominus$  pressure sides deflects the diaphragm (1) and displaces the transmission fluid.
- The deflection of the link (5) is converted through the use of a transmitting lever (6) into rotation, which is transferred over an axial shaft (7) to the movement (9).
- The torque pipe (8) seals, assuring a frictionless path from the measuring chamber.
- Overload safety is ensured by the all-metal construction and the close-fitting all-metal design.

Mounting according to affixed symbols,  $\oplus$  high pressure and  $\ominus$  low pressure

## Specifications

Models 732.14 and 762.14	
<b>Design</b>	Differential pressure gauge per DIN 16003, highest overload safety either side, pressure ratings PN 40, 100, 250 or 400. The transmission fluid in the measuring chamber dampens the indicator in case of high changes of the rate of pressure. <ul style="list-style-type: none"> <li>■ Version with special materials (model 762.14)</li> <li>■ Version with liquid filling (models 733.14 and 763.14)</li> <li>■ Version with switch contacts</li> <li>■ Version with output signal</li> <li>■ Design per NACE MR 0175/ISO 15156-T3</li> </ul>
<b>Nominal size in mm</b>	<ul style="list-style-type: none"> <li>■ 100</li> <li>■ 160</li> </ul>
<b>Accuracy class</b>	
Model 732.14	1.6
Model 762.14	2.5
<b>Scale ranges</b>	
Instruments with PN 40 and 100	<ul style="list-style-type: none"> <li>■ 0 ... 60 mbar to 0 ... 160 mbar [0 ... 0.9 to 0 ... 2.3 psi] (measuring chamber □ 140)</li> <li>■ 0 ... 0.25 bar to 0 ... 40 bar [0 ... 3.6 to 0 ... 580 psi] (measuring chamber □ 82)</li> </ul>
Instruments with PN 250	<ul style="list-style-type: none"> <li>■ 0 ... 60 mbar to 0 ... 250 mbar [0 ... 0.9 to 0 ... 3.6 psi] (measuring chamber □ 140)</li> <li>■ 0 ... 0.4 bar to 0 ... 40 bar [0 ... 5.8 to 0 ... 580 psi] (measuring chamber □ 82)</li> </ul>
Instruments with PN 400	<ul style="list-style-type: none"> <li>■ 0 ... 0.4 bar to 0 ... 40 bar [0 ... 5.8 to 0 ... 580 psi] (measuring chamber □ 86)</li> </ul>
<b>Scale</b>	<ul style="list-style-type: none"> <li>■ Single scale</li> <li>■ Dual scale</li> <li>■ Special scale (e.g. linear pressure or square root incrementation)</li> </ul>
<b>Zero point setting</b>	<ul style="list-style-type: none"> <li>■ External setting, for instruments with liquid filling</li> <li>■ Setting by means of adjustable pointer, for instruments without liquid filling</li> </ul>
<b>Pressure limitation</b>	
Steady	Full scale value
Fluctuating	0.9 x full scale value
<b>Overload safety and max. working pressure (static pressure)</b>	Either side max. 40, 100, 250 or 400 bar [580, 1,450, 3,625 or 5,800 psi]








<b>Models 732.14 and 762.14</b>	
<b>Connection location</b>	<ul style="list-style-type: none"> <li>■ Lower mount (radial)</li> <li>■ Other connection location on request</li> </ul>
<b>Process connection</b>	<ul style="list-style-type: none"> <li>■ 2 x G ½ female thread</li> <li>■ 2 x G ½ B male thread</li> <li>■ 2 x ½ NPT male thread</li> </ul>
<b>Permissible temperature</b>	
Medium	<ul style="list-style-type: none"> <li>■ ≤ 100 °C</li> <li>■ &gt; 100 °C</li> </ul>
Ambient	<ul style="list-style-type: none"> <li>■ -20 ... +60 °C [-4 ... +140 °F]</li> <li>■ -40 ... +60 °C [-40 ... +140 °F] for versions with silicone oil filling</li> </ul>
<b>Temperature effect</b>	When the temperature of the measuring system deviates from the reference temperature (+20 °C [68 °F]): max. ±0.5 %/10 K of full scale value
<b>Transmission fluid in the measuring chamber</b>	<ul style="list-style-type: none"> <li>■ Silicone oil</li> <li>■ Glycerine</li> </ul> Other transmission fluids on request
<b>Materials (wetted)</b>	
Media chambers with process connection	Stainless steel 1.4571
Pressure element	Model 732.14: <ul style="list-style-type: none"> <li>■ Stainless steel 316L for scale ranges ≤ 0.25 bar [3.6 psi]</li> <li>■ Stainless steel 316L / Inconel for scale ranges &gt; 0.25 bar [3.6 psi]</li> </ul> Model 762.14: <ul style="list-style-type: none"> <li>■ Monel 2.4360</li> <li>■ Hastelloy C276 for design per NACE MR 0175/ISO 15156-T3</li> </ul>
Venting of the media chambers <sup>1)</sup>	<ul style="list-style-type: none"> <li>■ Model 732.14: Stainless steel 316L</li> <li>■ Model 762.14: Monel 2.4360</li> </ul>
Sealings	FPM/FKM
Orifice flanges	<ul style="list-style-type: none"> <li>■ Model 732.14: Stainless steel 316L</li> <li>■ Model 762.14: Monel 2.4360</li> </ul>
<b>Materials (non-wetted)</b>	
Flange connecting screws	<ul style="list-style-type: none"> <li>■ PN 40 and 100: Stainless steel</li> <li>■ PN 250 and 400: Steel, corrosion-protected</li> </ul>
Measuring chamber	Chrome steel
Case	Stainless steel, safety level "S1" per EN 837: With blow-out device
Movement, bayonet ring	Stainless steel
Dial	Aluminium, white, black lettering
Instrument pointer	<ul style="list-style-type: none"> <li>■ Model 7x2.14: Adjustable pointer, aluminium, black</li> <li>■ Model 7x3.14: Standard pointer, aluminium, black</li> </ul>
Window	Laminated safety glass
<b>Ingress protection per IEC/EN 60529</b>	<ul style="list-style-type: none"> <li>■ IP54</li> <li>■ IP65 for instruments with liquid filling</li> </ul>
<b>Mounting</b>	Mounting by means of: <ul style="list-style-type: none"> <li>■ Rigid measuring lines</li> <li>■ Mounting holes at the back of the instrument</li> </ul>

1) For small scale ranges, venting of the media chambers is always provided. For scale ranges ≥ 0.25 bar [3.63 psi], venting of the media chambers can be ordered.

## Static pressure influence

Scale range	PN 40	PN 100	PN 250	PN 400
0.06 ... 0.16 bar [0.9 ... 2.3 psi]	±0.5 %/1 bar	±1.0 %/1 bar	±3.0 %/1 bar	-
0.25 bar [3.6 psi]	±0.5 %/1 bar	±1.5 %/1 bar	-	-
0.4 bar [5.8 psi]	±0.5 %/1 bar	±1.0 %/1 bar	±2.5 %/1 bar	-
0.6 ... 40 bar [8.7 ... 580 psi]	±0.5 %/1 bar	±1.0 %/1 bar	±1.5 %/1 bar	±2.5 %/1 bar

## Approvals

Logo	Description	Country
 	<b>EU declaration of conformity</b> ■ Pressure equipment directive ■ ATEX directive (option) Ignition protection type "c", constructive safety	European Union
	<b>EAC (option)</b> Hazardous areas	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr (option)</b> Metrology, measurement technology	Kazakhstan
-	<b>MTSCHS (option)</b> Permission for commissioning	Kazakhstan
	<b>BelGIM (option)</b> Metrology, measurement technology	Belarus
	<b>UkrSEPRO (option)</b> Metrology, measurement technology	Ukraine
-	<b>CPA (option)</b> Metrology, measurement technology	China
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

## Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy)

Approvals and certificates, see website

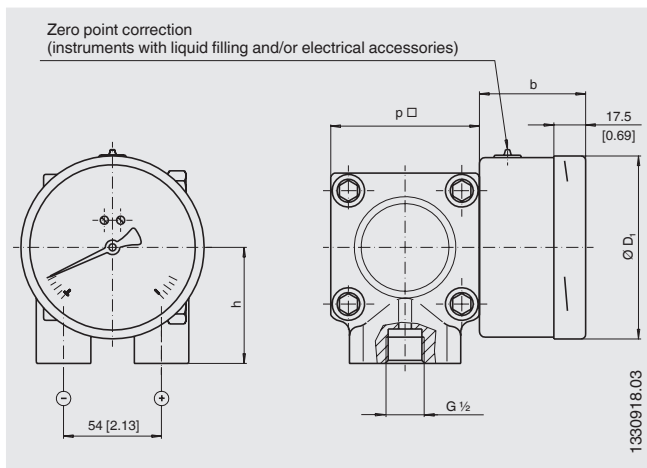
## Accessories

- Panel mounting flange
- Instrument mounting bracket for wall or pipe mounting, painted steel or stainless steel
- Valve manifolds (models IV3x, IV5x, see data sheet AC 09.23)
- Differential process connection per DIN EN 61518

## Dimensions in mm [in]

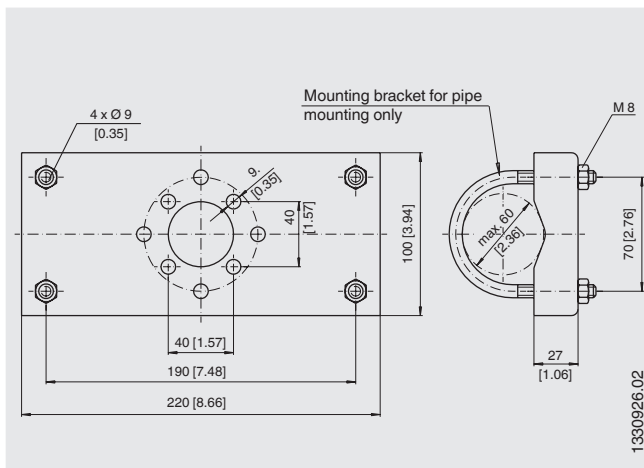
### Standard version

Connection 2 x G 1/2 female thread, lower mount



### Accessories

Instrument mounting bracket for wall or pipe mounting



### Instruments with PN 40 and 100

NS	Scale range	Dimensions in mm [in]					Weight in kg	
		b	$D_1$	$h \pm 1$	$\rho \square$ PN 40	$\rho \square$ PN 100	PN 40	PN 100
100	$\leq 0.16$ bar [2.3 psi]	58.5 [2.3]	101 [4.0]	86 [3.4]	140 [5.5]	140 [5.5]	12.1	12.1
100	$\geq 0.25$ bar [3.6 psi]	58.5 [2.3]	101 [4.0]	64 [2.5]	82 [3.2]	82 [3.2]	3.6	3.6
160	$\leq 0.16$ bar [2.3 psi]	65.5 [2.6]	161 [6.3]	86 [3.4]	140 [5.5]	140 [5.5]	12.5	12.5
160	$\geq 0.25$ bar [3.6 psi]	65.5 [2.6]	161 [6.3]	64 [2.5]	82 [3.2]	82 [3.2]	4.0	4.0

### Instruments with PN 250 and 400

NS	Scale range	Dimensions in mm [in]					Weight in kg	
		b	$D_1$	$h \pm 1$	$\rho \square$ PN 250	$\rho \square$ PN 400	PN 250	PN 400
100	$\leq 0.25$ bar [3.6 psi]	58.5 [2.3]	101 [4.0]	86 [3.4]	140 [5.5]	-	13.1	-
100	$\geq 0.4$ bar [5.8 psi]	58.5 [2.3]	101 [4.0]	64 [2.5]	82 [3.2]	86 [3.4]	3.9	4.5
160	$\leq 0.25$ bar [3.6 psi]	65.5 [2.6]	161 [6.3]	86 [3.4]	140 [5.5]	-	13.5	-
160	$\geq 0.4$ bar [5.8 psi]	65.5 [2.6]	161 [6.3]	64 [2.5]	82 [3.2]	86 [3.4]	4.3	4.9

Process connection per DIN 16003

### Ordering information

Model / Nominal size / Scale range / Scale layout (linear pressure or square root incrementation) / Max. working pressure (static pressure) / Overload safety (one side or both sides to ... bar / Medium (liquid or gaseous, density  $\rho$  ...) / Medium temperature (constant ... °C, fluctuating from ... to ... °C / Connection location / Process connection / Options

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# Digital pressure gauge Model CPG500

WIKA data sheet CT 09.01



for further approvals see  
page 3

## Applications

- Calibration service companies and service industry
- Measurement and control laboratories
- Quality assurance
- Easy on-site calibration

## Special features

- Measuring ranges from -1 ... +16 bar to 0 ... 1,000 bar (-14.5 ... 230 psi to 0 ... 14,500 psi)
- Accuracy: 0.25 % (incl. calibration certificate)
- Robust case with protective rubber cap
- Simple operation using four buttons
- Complete service cases incl. pressure generation available



Digital pressure gauge model CPG500

## Description

### General information

The model CPG500 digital pressure gauge enables the measurement and display of pressure values in a single instrument. The accuracy of digital measurement technology and the simplicity of an analogue gauge are combined in this instrument.

### Accuracy

The CPG500 offers an accuracy of 0.25 % of span in eight pressure measuring ranges. Readings can be displayed in one of five standard units.

### Sampling rate

With a measuring rate of 100 measurements per second, the CPG500 features a very high measuring rate. With this, fast pressure peaks and drops in pressure can be detected. The bar graph display and drag pointer function integrated into the display, as well as retrievable MIN/MAX peak values, enable effective analysis of the measuring point.

### Features

In order to prolong the battery life, the CPG500 features an automatic switch-off function. With the ZERO function, the display value can be zeroed with the simple press of a button. An activatable filter function stabilises pressures which fluctuate strongly, and enables the pressure value to be read easily.

### Complete test and service cases

For maintenance and service applications, various case systems are available. Service cases with pneumatic or hydraulic pressure generation are available.

### Certified accuracy

For each digital pressure gauge, the accuracy is certified by a factory calibration certificate which accompanies the instrument. On request, a DKD/DAkkS calibration certificate will be provided for this instrument.

# Specifications

## Model CPG500







Sensor technology				
<b>Measuring range</b>	<b>-1 ... +16 bar</b>			
Resolution	0.001			
<b>Measuring range</b>	<b>-1 ... +20 bar</b>	<b>-1 ... +40 bar</b>	<b>0 ... 60 bar</b>	<b>0 ... 100 bar</b>
Resolution	0.01			
<b>Measuring range</b>	<b>0 ... 350 bar</b>	<b>0 ... 700 bar</b>	<b>0 ... 1,000 bar</b>	
Resolution	0.1			
<b>Measuring range</b>	<b>-14,5 ... 230 psi</b>			
Resolution	0.001			
<b>Measuring range</b>	<b>-14,5 ... 290 psi</b>	<b>-14,5 ... 580 psi</b>	<b>0 ... 870 psi</b>	<b>0 ... 1,540 psi</b>
Resolution	0.01			
<b>Measuring range</b>	<b>0 ... 5,000 psi</b>	<b>0 ... 10,000 psi</b>	<b>0 ... 14,500 psi</b>	
Resolution	0.1			
<b>Overload safety</b>	3 times; < 25 bar (< 360 psi) 2 times; > 25 bar ... ≤ 600 bar (> 360 psi ... ≤ 8,700 psi) 1.5 times; > 600 bar (> 8,700 psi)			
<b>Pressure connection</b>	G ¼ up to a max. 40 bar (580 psi) G ½ from > 40 bar (> 580 psi)			
<b>Accuracy</b>	0.25 % FS ±1 digit			

Base instrument	
<b>Indicator</b>	
Display	4 ½ digit, bar graph with drag pointer function, illuminated
Digit height	15 mm (0.59 in)
Rotatable case	> 270 °
Dimensions	50 x 34 mm (1.97 x 1.34 in)
Pressure units	bar, psi, MPa, kPa, kg/cm <sup>2</sup>
<b>Functions</b>	
Measuring rate	10 ms
Memory	MIN/MAX
Autopower	Selectable
Zero function	Zero point adjustment
Reset	Delete MIN/MAX value
<b>Material</b>	
Wetted parts <sup>1)</sup>	Stainless steel with sealing NBR
Case	Die-cast zinc with TPE protective rubber cap
<b>Voltage supply</b>	
Power supply	2 x 1.5 V AA batteries
Battery life	approx. 1,500 hrs.
Battery status display	Icon in display
<b>Permissible ambient conditions</b>	
Operating temperature	-10 ... +50 °C (14 ... 122 °F)
Medium temperature	-20 ... +80 °C (-4 ... +176 °F)
Storage temperature	-20 ... +60 °C (-4 ... +140 °F)
Relative humidity	< 85 % r. h. (non-condensing)

1) Only for use with safe media per directive 67/548/EEC (article 2, paragraph 2).

Base instrument	
<b>Case</b>	
Dimensions	79 x 79 x 33 mm (3.11 x 3.11 x 1.30 in)
Ingress protection	IP67
Weight	approx. 400 g (0.882 lbs)

## Approvals

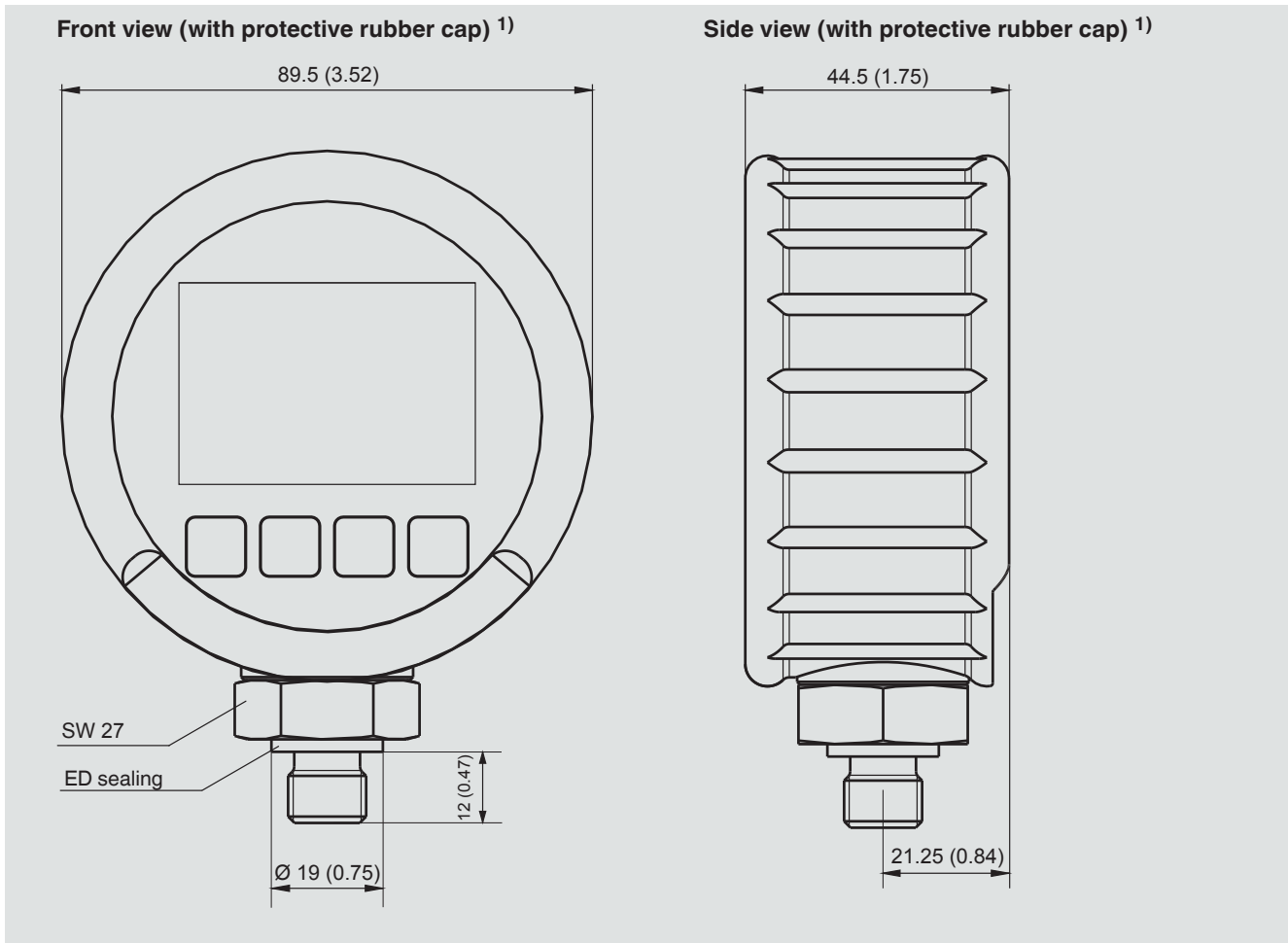
Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive EN 61326 emission (group 1, class B) and interference immunity (industrial application)</li> <li>■ Pressure equipment directive</li> <li>■ RoHS conformity</li> </ul>	European Union
	<b>EAC</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment directive</li> </ul>	Eurasian Economic Community
-	<b>MTSCHS</b> Permission for commissioning	Kazakhstan
	<b>KazInMetr</b> Metrology, measurement technology	Kazakhstan
	<b>BelGIM</b> Metrology, measurement technology	Belarus
	<b>UkrSEPRO</b> Metrology, measurement technology	Ukraine
	<b>Uzstandard</b> Metrology, measurement technology	Uzbekistan

## Certificates

Certificate	
<b>Calibration</b>	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
<b>Recommended recalibration interval</b>	1 year (dependent on conditions of use)

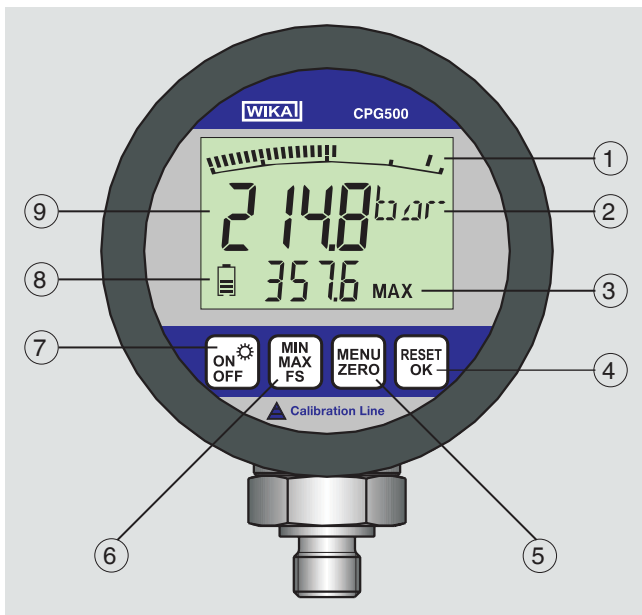
Approvals and certificates, see website

## Dimensions in mm (in)



1) Drawing with G ¼ pressure connection

## Front foil



- ① Bar graph indicates the current pressure graphically
- ② Currently set unit
- ③ Display of the measuring range or the MIN/MAX value
- ④ Clear the MIN/MAX values  
Confirmation function in the menu
- ⑤ Hold down to access the menu  
Zero point adjustment carried out by simply pressing
- ⑥ Change display value to MIN/MAX or FS (Full Scale)
- ⑦ With a single press, switch the digital pressure gauge on/off  
Press for a while in order to switch the backlighting on
- ⑧ Battery status
- ⑨ Pressure indication

## Complete test and service cases



Basic version incl. pneumatic pressure generation

Calibration case with model CPG500 digital pressure gauge and model CPP40 hand test pump, for pressures -0.95 ... +40 bar (13.8 ... 580 psi), consisting of:

- Plastic service case with foam insert
- Digital pressure gauge model CPG500
- Pneumatic hand test pump model CPP40; -0.95 ... +40 bar (13.8 ... 580 psi)

Available measuring ranges see specifications



Basic version incl. hydraulic pressure generation

Calibration case with model CPG500 digital pressure gauge and model CPP700-H or CPP1000-H hand test pumps, for pressures 0 ... 700 bar (0 ... 10,000 psi) or 0 ... 1,000 bar (0 ... 14,500 psi), consisting of:

- Plastic service case with foam insert
- Digital pressure gauge model CPG500
- Hydraulic hand test pump model CPP700-H or CPP1000-H, 0 ... 700 bar (0 ... 10,000 psi) or 0 ... 1,000 bar (0 ... 14,500 psi)

Available measuring ranges see specifications

## Recommended pressure generation

### Pneumatic hand test pump model CPP40

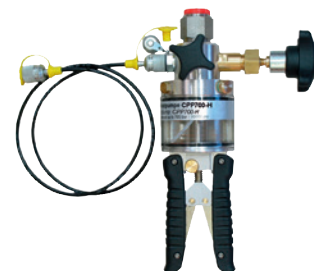
Pressure range: -0.95 ... +40 bar (13.8 ... 580 psi)



### Model CPP700-H or model CPP1000-H hydraulic hand test pumps

Pressure range: 0 ... 700 bar or 0 ... 1,000 bar  
(0 ... 10,000 psi or 0 ... 14,500 psi)

Further specifications see data sheet CT 91.07



## Scope of delivery

- Digital pressure gauge model CPG500
- Operating instructions
- 3.1 calibration certificate per DIN EN 10204
- 2 x AA batteries
- Protective rubber cap for case

## Option

- DKD/DAkkS certified accuracy

## Accessories

### Connection adapters

- Various pressure adapters

### Pressure generation

- Pneumatic test pumps
- Hydraulic test pumps

### Test case

- Various calibration cases incl. pressure generation

## Ordering information

Model / Unit / Measuring range / Process connection / Test pump / Transport case / Type of certificate / Further approvals / Additional ordering information

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# Differential pressure gauge with switch contacts

## For the process industry, all-metal media chamber

### Models DPGS43.100, DPGS43.160

WIKA data sheet PV 27.05



for further approvals see page 9

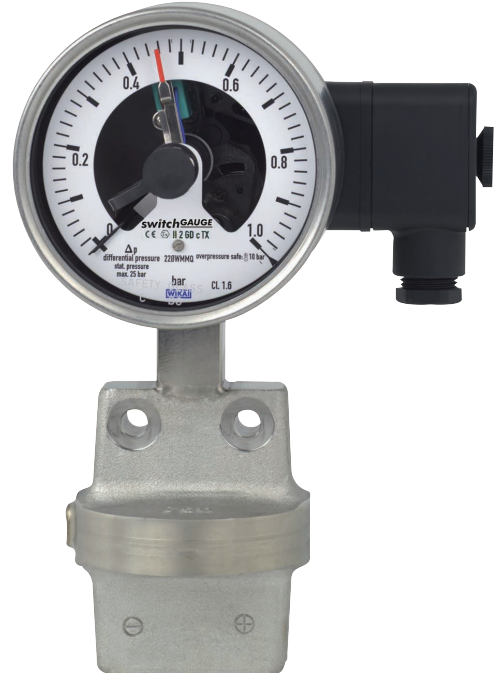
**switchGAUGE**

### Applications

- Control and regulation of processes
- Monitoring of plants and switching of circuits
- For measuring points with increased differential overpressure
- Filter and pump monitoring
- Level measurement on closed vessels

### Special features

- Differential pressure measuring ranges from 0 ... 16 mbar
- High working pressure (static pressure) and high overload safety up to 40 bar
- Also available with liquid-filled case for high dynamic pressure loads or vibrations
- Instruments with inductive contacts for use in hazardous areas
- Instruments with switch contact for PLC applications



**Differential pressure gauge model DPGS43.100 with switch contact model 831.2**

### Description

Wherever the process pressure has to be indicated locally and, at the same time, circuits need to be switched, the model DPGS43.1x0 switchGAUGE finds its use.

Switch contacts (electrical alarm contacts) make or break circuits dependent upon the pointer position of the pressure gauge. The switch contacts are adjustable over the full extent of the scale range (see DIN 16085), and are mounted predominantly below the dial, though also partly on top of the dial. The instrument pointer (actual value pointer) moves freely across the entire scale range, independent of the setting.

The set pointer can be adjusted using a removable adjustment key in the window.

Switch contacts consisting of several contacts can also be set to a single set point. Contact actuation is made when the actual value pointer travels beyond or below the desired set point.

The differential pressure gauge is manufactured in accordance with DIN 16085 and fulfils all requirements of the relevant standards (EN 837-3) and regulations for the on-site display of the working pressure of pressure vessels. As switch contacts, magnetic snap-action contacts, reed switches, inductive contacts and electronic contacts are available. Inductive contacts can be used in hazardous areas. For triggering programmable logic controllers (PLC), electronic contacts and reed switches can be used.

## Specifications

Models DPGS43.100, DPGS43.160	
<b>Version</b>	Process connections lower mount or lateral (option), highly corrosion-resistant solid metal design, measuring cell protected against unauthorised access. Overload resistance per EN 837-3
<b>Nominal size in mm</b>	<ul style="list-style-type: none"> <li>■ 100</li> <li>■ 160</li> </ul>
<b>Accuracy class</b>	1.6 Option: 1.0 on request
<b>Scale ranges</b>	0 ... 16 mbar to 0 ... 250 mbar 0 ... 400 mbar to 0 ... 40 bar other units (e.g. psi, kPa) available or all other equivalent vacuum or combined pressure and vacuum ranges
<b>Scale</b>	Single scale Option: <ul style="list-style-type: none"> <li>■ Dual scale</li> <li>■ Scale layout (e.g. linear pressure or square root incrementation)</li> </ul>
<b>Pressure limitation</b>	
Steady	Full scale value
Fluctuating	0.9 x full scale value Observe the recommendations for the use of mechanical pressure measuring systems in accordance with EN 837-2
<b>Overpressure safety and max. working pressure (static pressure)</b>	see table on page 3
<b>Connection location</b>	Lower mount (radial) Option: lateral (right, left, front or back)
<b>Process connection</b>	<ul style="list-style-type: none"> <li>■ G ¼ B female</li> <li>■ G ½ B male</li> <li>■ ½ NPT male</li> </ul> Other process connections via female or male threads on request
<b>Permissible temperature <sup>1)</sup></b>	
Medium	-20 ... +100 °C Option: Medium temperature > 100 °C on request
Ambient	-20 ... +60 °C (with window from polycarbonate max. 80 °C)
<b>Temperature effect</b>	When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. ±0.5 %/10 K of full scale value
<b>Case</b>	<ul style="list-style-type: none"> <li>■ Version S1 per EN 837: With blow-out device in case back</li> <li>■ Safety version S3 per EN 837: With solid baffle wall (Solidfront) and blow-out back</li> </ul>
<b>Case filling</b>	Without Option: With case filling
<b>Venting of the media chamber</b>	With scale ranges ≤ 0.25 bar Option: With scale ranges ≥ 0.4 bar

<sup>1)</sup> For hazardous areas, the permissible temperature of the contact model 831 will exclusively apply (see page 5). These must not be exceeded at the instrument either (for details see operating instructions). If necessary, measures for cooling (e.g. syphon, instrumentation valve, etc.) have to be taken.



## Models DPGS43.100, DPGS43.160

### Wetted materials

Media chamber with process connection	Stainless steel 316Ti (1.4571) Lower mount 2 x G ¼ female
Pressure elements	≤ 0.25 bar: Stainless steel 316L > 0.25 bar: NiCr alloy (Inconel)
Venting of the media chamber	Stainless steel 316Ti (1.4571) for scale ranges ≤ 0.25 bar Option: with scale ranges ≥ 0.4 bar
Bellows	Stainless steel 316Ti (1.4571)

### Non-wetted materials

Movement	Brass
Dial	Aluminium, white, black lettering
Pointer	Aluminium, black
Case	Stainless steel, with blow-out device
Window	Laminated safety glass
Ring	Bayonet ring, stainless steel

<b>Ingress protection per IEC/EN 60529</b>	IP54 <sup>1)</sup> Option: IP65 with liquid filling
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<b>Installation</b>	according to affixed symbols: ⊕ high pressure, ⊖ low pressure
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<b>Mounting</b>	<ul style="list-style-type: none"> <li>■ Rigid measuring lines</li> <li>■ Mounting holes in measuring flange</li> </ul> Option: <ul style="list-style-type: none"> <li>■ Panel mounting flange</li> <li>■ Instrument mounting bracket for wall or pipe mounting</li> </ul>
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<b>Electrical connection</b>	Cable socket PA 6, black Per VDE 0110 insulation group C/250 V Cable gland M20 x 1.5 Strain relief 6 screw terminals + PE for conductor cross-section 2.5 mm <sup>2</sup> For dimensions see page 10 others on request
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1) Ingress protection IP54 with safety version and lower back mount.

### Overload safety and max. working pressure

Scale ranges	Overload safety in bar either side max.		Max. working pressure in bar (static pressure)	
	Standard	Option	Standard	Option
0 ... 16 to 0 ... 40 mbar	2.5	-	2.5	6 <sup>2)</sup>
0 ... 60 to 0 ... 250 mbar	2.5	6	6	10
0 ... 400 mbar	4	40	25	40
0 ... 0.6 bar	6	40	25	40
0 ... 1 bar	10	40	25	40
0 ... 1.6 bar	16	40	25	40
0 ... 2.5 to 0 ... 25 bar	25	40	25	40

2) Accuracy class 2.5

### Options

- Zero point adjustment appliance
- Restrictor in the pressure port

## Switch contacts

### Magnetic snap-action contact model 821

- No control unit and no supply voltage required
- Direct switching up to 250 V, 1 A
- Up to 4 switch contacts per measuring instrument

### Inductive contact model 831

- Suitable for use in hazardous areas with corresponding control unit (model 904.xx)
- Long service life due to non-contact sensor
- Low influence on the indication accuracy
- Fail-safe switching at high switching frequency
- Insensitive to corrosion
- Also available in safety version
- Up to 3 switch contacts per measuring instrument

### Electronic contact model 830 E

- For direct triggering of a programmable logic controller (PLC)
- 2-wire system (option: 3-wire system)
- Long service life due to non-contact sensor
- Low influence on the indication accuracy
- Fail-safe switching at high switching frequency
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

## Other versions

- Contact model 821 with separate circuits
- Contact model 821 as change-over contact (break or make simultaneously at the set point)
- Contact model 821 with cable break monitoring (parallel resistance 47 k $\Omega$  and 100 k $\Omega$ )
- Contact materials for contact model 821: Platinum-iridium alloy and gold-silver alloy
- Contacts fixed, without contact adjustment lock
- Contact adjustment lock leaded
- Contact adjustment key fixed
- Connector (instead of cable socket)

### Reed switch model 851

- No control unit and no supply voltage required
- Direct switching up to 250 V, 1 A
- For direct triggering of a programmable logic controller (PLC)
- Free from wear as without contact
- NS 100: Up to two change-over contacts per measuring instrument;  
NS 160: Up to one change-over contact per measuring instrument (switching voltages AC < 50 V and DC < 75 V, switch contact not adjustable from outside)

### Switching function

The switching function of the switch is indicated by index 1, 2 or 3

Model 8xx.1: Normally open (clockwise pointer motion)

Model 8xx.2: Normally closed (clockwise pointer motion)

Models 821.3 Change-over; one contact breaks and one and 851.3: contact makes simultaneously when pointer reaches set point

For further information on switch contacts, see data sheet AC 08.01

## Specifications for instruments with magnetic snap-action contact model 821

Measuring span	Nominal size	Max. number of contacts	Switching current range I	Switch version <sup>1)</sup>
≤ 1.0 bar	100, 160	1	0.02 ... 0.3 A	L
> 1.0 bar	100, 160	1	0.02 ... 0.6 A	S
≤ 1.6 bar	100, 160	2	0.02 ... 0.3 A	L
> 1.6 bar	100, 160	2	0.02 ... 0.6 A	S
≤ 4.0 bar	100	4	0.02 ... 0.3 A	L
> 4.0 bar	100	4	0.02 ... 0.6 A	S
≤ 2.5 bar	160	4	0.02 ... 0.3 A	L
> 2.5 bar	160	4	0.02 ... 0.6 A	S

1) Design of the contact coil: Version "L" = light-weight, version "S" = heavy

The recommended setting range of the contacts is 25 ... 75 % of the scale (0 ... 100 % on request).

Contact material (standard): Silver-nickel, gold-plated

### Setting the contacts

The recommended minimum clearance between 2 contacts is 20 % of the measuring span.

The switch hysteresis is 2 ... 5 % (typical).

Characteristics	Unfilled instruments		Filled instruments	
	Resistive load		Resistive load	
	Switch version "S"	Switch version "L"	Switch version "S"	Switch version "L"
Rated operating voltage $U_{\text{eff}}$	≤ 250 V		≤ 250 V	
Rated operating current				
Switch-on current	≤ 1.0 A	≤ 0.5 A	≤ 1.0 A	≤ 0.5 A
Switch-off current	≤ 1.0 A	≤ 0.5 A	≤ 1.0 A	≤ 0.5 A
Continuous current	≤ 0.6 A	≤ 0.3 A	≤ 0.6 A	≤ 0.3 A
Switching power	≤ 30 W / ≤ 50 VA		≤ 20 W / ≤ 20 VA	

### Recommended contact load with resistive and inductive loads

Operating voltage	Unfilled instruments			Filled instruments		
	Resistive load		Inductive load	Resistive load		Inductive load
	Direct current	Alter-nating current	$\cos \varphi > 0.7$	Direct current	Alter-nating current	$\cos \varphi > 0.7$
DC 220 V / AC 230 V	100 mA	120 mA	65 mA	65 mA	90 mA	40 mA
DC 110 V / AC 110 V	200 mA	240 mA	130 mA	130 mA	180 mA	85 mA
DC 48 V / AC 48 V	300 mA	450 mA	200 mA	190 mA	330 mA	130 mA
DC 24 V / AC 24 V	400 mA	600 mA	250 mA	250 mA	450 mA	150 mA

## Specifications for instruments with inductive contact model 831

Measuring span	Nominal size	Case version	Max. number of contacts
0.6 bar	100, 160	S1	1
0.6 bar	160	S3	1
1.0 bar	100, 160	S1	2
1.0 bar	100	S3	1
1.0 bar	160	S3	2
≥ 1.6 bar	100, 160	S1, S3	3

Legend:

S1 = Standard version, with blow-out device (per EN 837)

S3 = Safety version, Solidfront (per EN 837)

The recommended setting range of the contacts is 10 ... 90 % of the scale (0 ... 100 % on request).

### Setting of contacts to identical set point

Up to 2 contacts can be set to an identical set point. For a version with 3 contacts this is not possible. The left (no. 1) or right (no. 3) contact may not be set to the same set point as the other 2 contacts. The required displacement is approx. 30°, optionally to the right or to the left.

### Available contact versions

- 831-N
- 831-SN, safety version <sup>1)</sup>
- 831-S1N, safety version <sup>1)</sup>, inverted signal

<sup>1)</sup> only operate with a corresponding isolating amplifier (model 904.3x)

### Permissible temperature ranges

T6	T5 ... T1	T135°C
-20 ... +60 °C	-20 ... +70 °C	-20 ... +70 °C

For further information on hazardous areas, see operating instructions.

### Associated isolating amplifiers and control units

Model	Version	Ex version
904.28 KFA6 - SR2 - Ex1.W	1 contact	yes
904.29 KFA6 - SR2 - Ex2.W	2 contacts	yes
904.30 KHA6 - SH - Ex1	1 contact	yes - safety equipment
904.33 KFD2 - SH - Ex1	1 contact	yes - safety equipment
904.25 MSR 010-I	1 contact	no
904.26 MSR 020-I	2 contacts	no
904.27 MSR 011-I	Two-point control	no

## Specifications for instruments with electronic contact model 830 E

Measuring span	Nominal size	Case version	Max. number of contacts
0.6 bar	100, 160	S1	1
0.6 bar	160	S3	1
1.0 bar	100, 160	S1	2
1.0 bar	100	S3	1
1.0 bar	160	S3	2
≥ 1.6 bar	100, 160	S1, S3	2

Legend:

S1 = Standard version, with blow-out device (per EN 837)

S3 = Safety version, Solidfront (per EN 837)

The recommended setting range of the contacts is 10 ... 90 % of the scale (0 ... 100 % on request).

### Setting of contacts to identical set point

Up to 2 contacts can be set to an identical set point. For a version with 3 contacts this is not possible. The left (no. 1) or right (no. 3) contact may not be set to the same set point as the other 2 contacts. The required displacement is approx. 30°, optionally to the right or to the left.

Characteristics	
Contact version	Normally open, normally closed
Type of output	PNP transistor
Operating voltage	DC 10 ... 30 V
Residual ripple	max. 10 %
No-load current	≤ 10 mA
Switching current	≤ 100 mA
Residual current	≤ 100 µA
Voltage drop (with $I_{max.}$ )	≤ 0.7 V
Reverse polarity protection	Conditional $U_B$ (the switched output 3 or 4 must never be set directly to minus)
Anti-inductive protection	1 kV, 0.1 ms, 1 kΩ
Oscillator frequency	approx. 1,000 kHz
EMC	per EN 60947-5-2

## Specifications for instruments with reed switch model 851










Measuring span	Nominal size	Max. number of contacts
≥ 16 mbar	100, 160	2

Switching power  $P_{\max}$  60 W / 60 VA  
 Switching current 1 A

Characteristics	
Contact version	Change-over contact
Type of contact	Bistable
Max. switching voltage	AC/DC 250 V
Min. switching voltage	Not required
Switching current	AC/DC 1 A
Min. switching current	Not required
Transport current	AC/DC 2 A
cos φ	1
Switching power	60 W/ VA
Contact resistance (static)	100 mΩ
Insulation resistance	10 <sup>9</sup> Ω
Breakdown voltage	DC 1,000 V
Switching time incl. contact chatter	4.5 ms
Contact material	Rhodium
Switch hysteresis	3 ... 5 %

- The limit values presented here must not be exceeded.
- When using two contacts, these cannot be set to the same point. Depending on the switching function, a minimum clearance of 15 ... 30° is required.
- The setting range of the contacts is 10 ... 90 % of the scale.
- The switching function can be set in manufacturing such that the reed contact will actuate exactly at the required switch point. For this, we need the switching direction to be specified on order.

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment directive</li> <li>■ ATEX directive (option) <sup>1)</sup></li> </ul> Hazardous areas <ul style="list-style-type: none"> <li>- Ex ia Gas [II 2G Ex ia IIC T6/T5/T4 Gb]</li> <li>Dust [II 2D Ex ia IIIB T85°C/T100°C/T135°C Db]</li> </ul>	European Union
	<b>IECEx (option) <sup>1)</sup></b> Hazardous areas <ul style="list-style-type: none"> <li>- Ex ia Gas [Ex ia IIC T6/T5/T4 Gb]</li> <li>Dust [Ex ia IIIB T85°C/T100°C/T135°C Db]</li> </ul>	International
	<b>EAC (option)</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment directive</li> <li>■ Low voltage directive</li> <li>■ Hazardous areas</li> </ul>	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr (option)</b> Metrology, measurement technology	Kazakhstan
-	<b>MTSCHS (option)</b> Permission for commissioning	Kazakhstan
	<b>BelGIM (option)</b> Metrology, measurement technology	Belarus
	<b>UkrSEPRO (option)</b> Metrology, measurement technology	Ukraine
	<b>DNOP (MakNII) (option)</b> Hazardous areas	Ukraine
	<b>Uzstandard (option)</b> Metrology, measurement technology	Uzbekistan
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

## Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

Approvals and certificates, see website

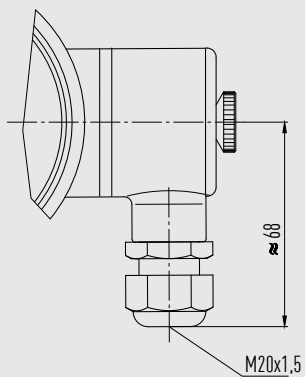
## Accessories

- Instrument mounting bracket for wall or pipe mounting
- Panel mounting flange, polished stainless steel
- Instrument mounting bracket for wall or pipe mounting, lacquered steel or stainless steel
- Sealings (model 910.17, see data sheet AC 09.08)
- Valves (models IV3x/IV5x, see data sheet AC 09.23)
- Diaphragm seal

## Dimensions in mm

### Cable socket

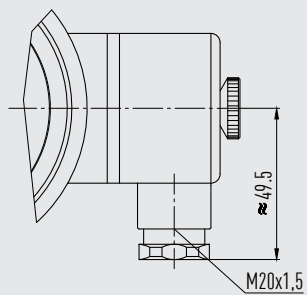
Contact models: 821 and 851



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Only use cable with a diameter of 5 ... 10 mm

Contact models: 831 and 830 E



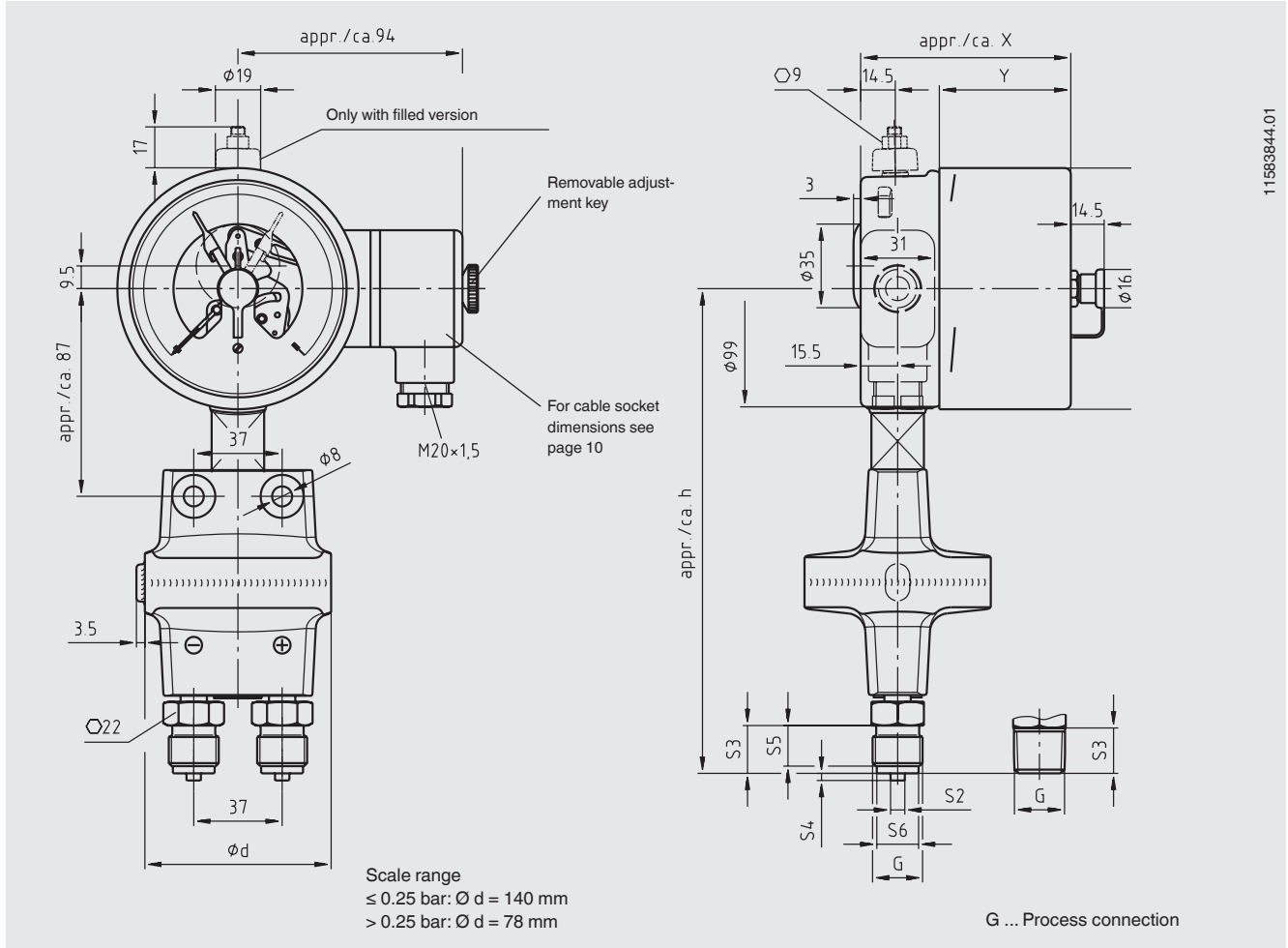
14336089.01

Only use cable with a diameter of 7 ... 13 mm



# Dimensions in mm

switchGAUGE model DPGS43.100 with switch contact model 821, 831 or 830 E

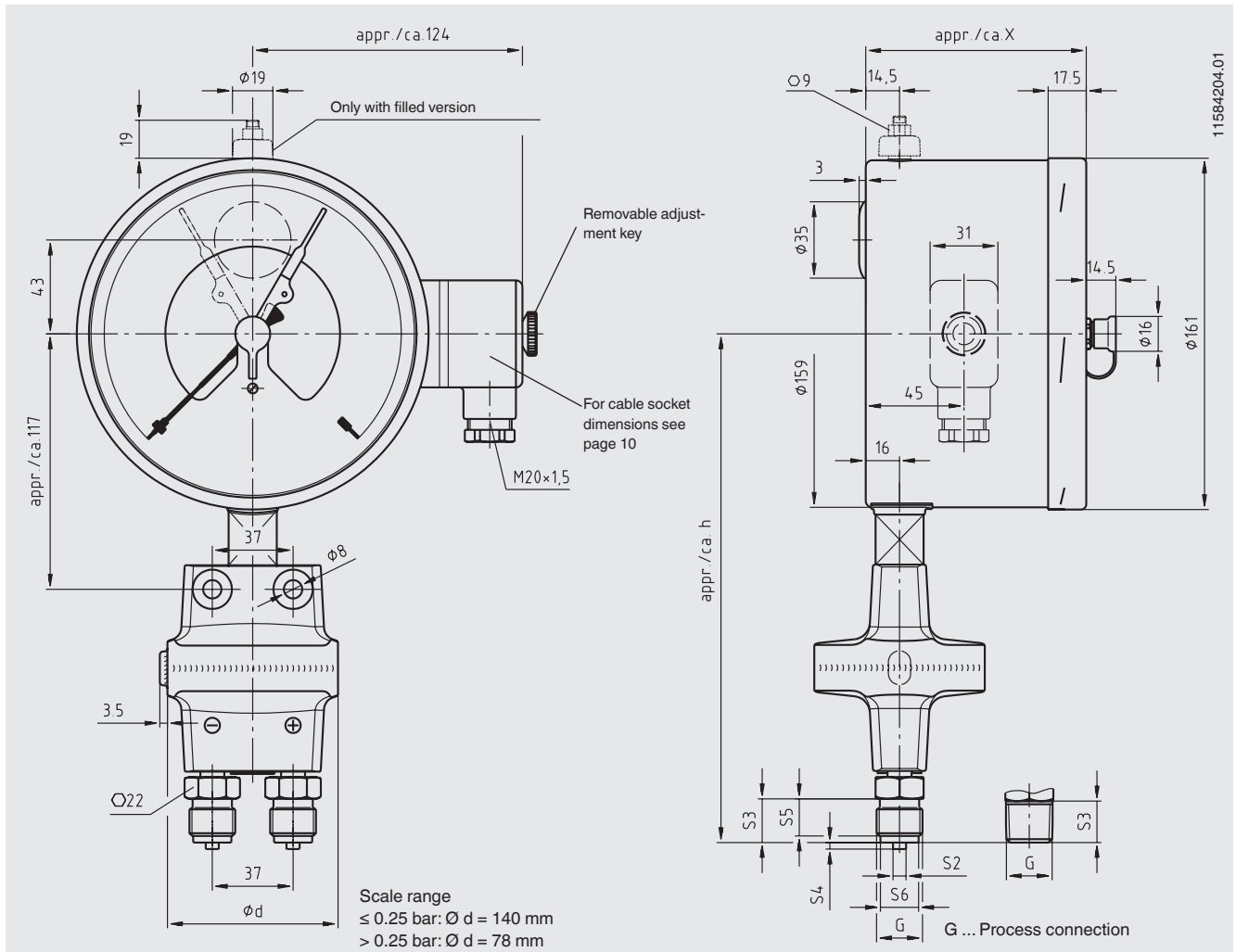


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Type of contact	Dimensions in mm	
	X	Y
Single or double contact	88	55
Double (change-over) contact	113	80
Triple contact	96	63
Quadruple contact	113	80

Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	203	6	20	3	17	17.5
½ NPT	201	-	19	-	-	-

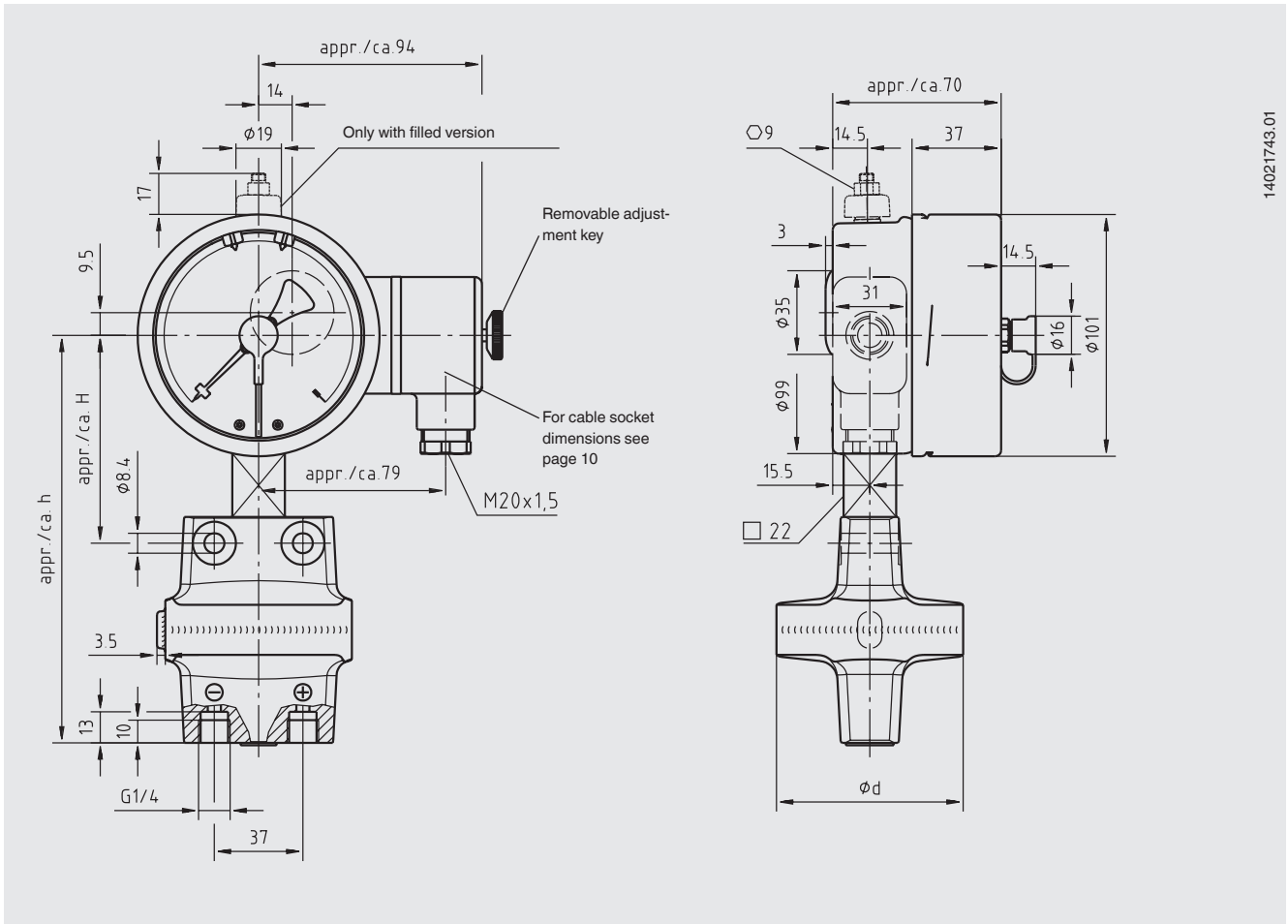
switchGAUGE model DPGS43.160 with switch contact model 821, 831 or 830 E



Type of contact	Dimensions in mm
	X
Single or double contact	102
Double (change-over) contact	116
Triple contact	102
Quadruple contact	116

Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	233	6	20	3	17	17.5
½ NPT	231	-	19	-	-	-

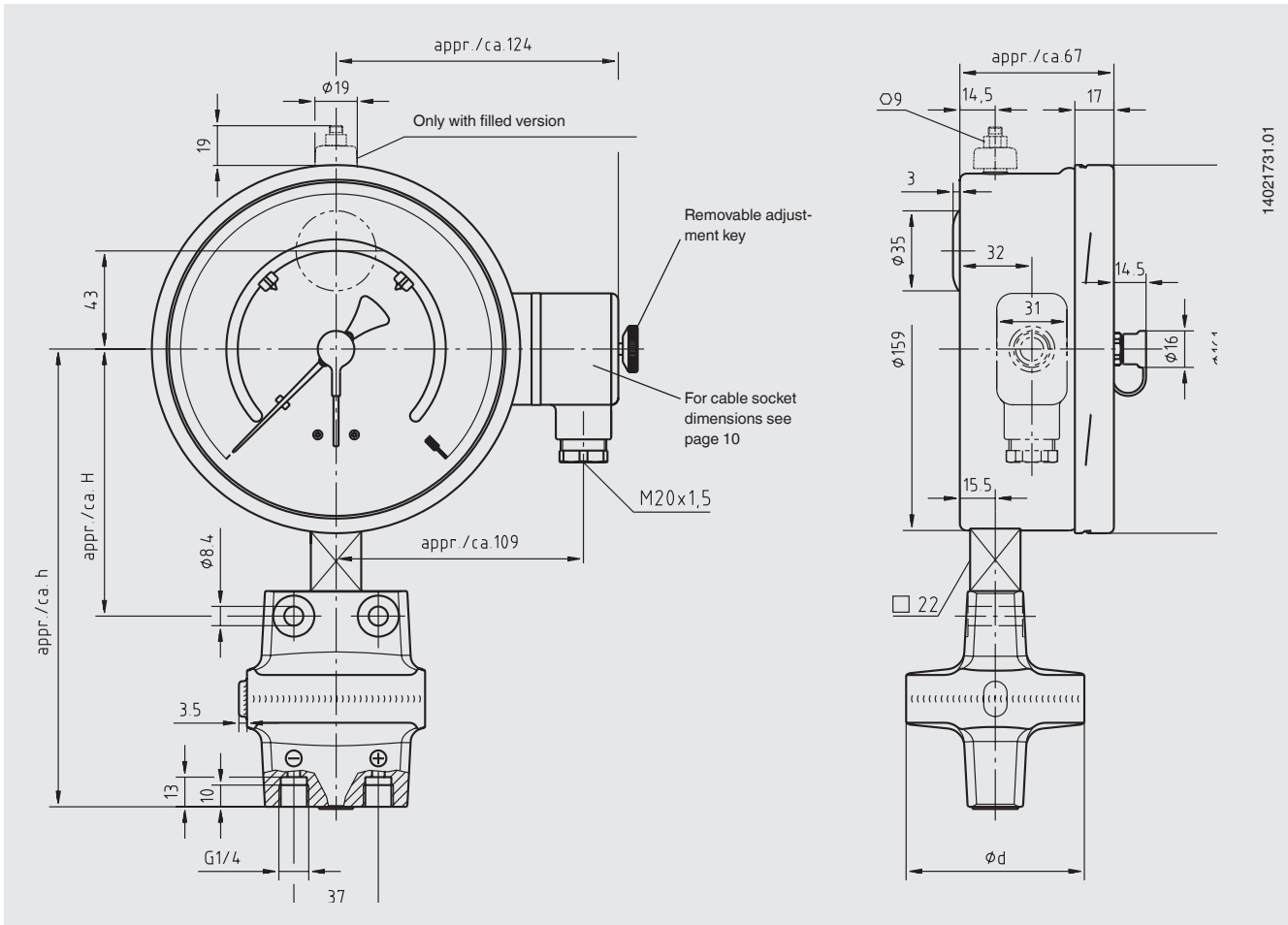
switchGAUGE model DPGS43.100 with switch contact model 851.3 or 851.33



14021743.01

Scale range	Dimensions in mm		
	$\phi d$	$h \pm 1$	$H \pm 1$
$\leq 0.25$ bar	140	161	90
$> 0.25$ bar	78	171	87

switchGAUGE model DPGS43.160 with switch contact model 851.3 or 851.33



14021731.01

Scale range	Dimensions in mm		
	Ø d	h ±1	H ±1
≤ 0.25 bar	140	201	117
> 0.25 bar	78	190	120

**Ordering information**

Model / Nominal size / Type of contact / Contact version / Scale range / Scale version (linear pressure or square root incrementation) / Max. working pressure (static pressure) / Process connection / Connection location / Options

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 We reserve the right to make modifications to the specifications and materials.



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# Bourdon tube pressure gauge with switch contacts

## For the process industry, NS 100 and 160

### Models PGS23.100 and PGS23.160

WIKA data sheet PV 22.02



for further approvals see  
page 8

**switchGAUGE**

### Applications

- Control and regulation of processes
- Monitoring of plants and switching of circuits
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Chemical industry, petrochemical industry, power plants, mining, on-/offshore, environmental technology, machine building and general plant construction

### Special features

- Up to 4 switch contacts per instrument
- Also available with case filling for high dynamic pressure loads or vibrations
- Instruments with inductive contacts for use in hazardous areas
- Instruments with contacts for PLC applications
- Instruments optionally available in safety version S3 per EN 837

### Description

Wherever the process pressure has to be indicated locally and, at the same time, circuits need to be switched, the model PGS23.1x0 switchGAUGE finds its use.

Switch contacts (electrical switch contacts) make or break an electric control circuit dependent upon the pointer position of the indicating measuring instrument. The switch contacts are adjustable over the full extent of the scale range (see DIN 16085), and are mounted predominantly below the dial, though also partly on top of the dial. The instrument pointer (actual value pointer) moves freely across the entire scale range, independent of the setting.

The set pointer can be adjusted using a removable adjustment key in the window.



**Model PGS23.100 with switch contact model 831.1**

Switch contacts consisting of several contacts can also be set to a single set point. Contact actuation is made when the actual value pointer travels beyond or below the desired set point.

The pressure gauge is manufactured in accordance with DIN 16085 and fulfils all requirements of the relevant standards (EN 837-1) and regulations for the on-site display of the working pressure of pressure vessels.

As switch contacts, magnetic snap-action contacts, reed switches, inductive contacts and electronic contacts are available. Inductive contacts can be used in hazardous areas. For triggering programmable logic controllers (PLC), electronic contacts and reed switches can be used.

## Specifications

Models PGS23.100 and PGS23.160	
Nominal size in mm	<ul style="list-style-type: none"> <li>■ 100</li> <li>■ 160</li> </ul>
Accuracy class	1.0
Scale ranges	0 ... 0.6 bar [0 ... 8.7 psi] to 0 ... 1,600 bar [0 ... 23,206 psi] other units (e.g. psi, kPa) available or all other equivalent vacuum or combined pressure and vacuum ranges
Scale	Single scale Option: Dual scale
Pressure limitation	
Steady	Full scale value
Fluctuating	0.9 x full scale value
Short time	1.3 x full scale value
Connection location	<ul style="list-style-type: none"> <li>■ Lower mount (radial)</li> <li>■ Lower back mount</li> </ul>
Process connection	<ul style="list-style-type: none"> <li>■ G ½ B</li> <li>■ G ¼ B</li> <li>■ G ⅜ B</li> <li>■ ½ NPT</li> <li>■ M20 x 1.5</li> <li>others on request</li> </ul>
Permissible temperature <sup>1)</sup>	
Medium	+200 °C [+392 °F] max. with unfilled instruments +100 °C [+212 °F] max. with filled instruments
Ambient	-20 ... +60 °C [-4 ... 140 °F]
Temperature effect	When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. ±0.4 %/10 K of full scale value
Case	<ul style="list-style-type: none"> <li>■ Version S1 per EN 837: With blow-out device in case back</li> <li>■ Safety version S3 per EN837: With solid baffle wall (Solidfront) and blow-out back</li> </ul>
Case filling	Without Option: With case filling
Wetted materials	
Process connection, pressure element	Stainless steel 316L, option: Monel (model PGS26)
Non-wetted materials	
Case, movement, bayonet ring	Stainless steel
Dial	Aluminium, white, black lettering
Instrument pointer	Aluminium, black
Set pointer	Aluminium, red
Window	Laminated safety glass
Ingress protection per IEC/EN 60529	IP65 <sup>2)</sup> Option: IP66
Electrical connection	Cable socket PA 6, black Per VDE 0110 insulation group C/250 V Cable gland M20 x 1.5 Strain relief 6 screw terminals + PE for conductor cross-section 2.5 mm <sup>2</sup> For dimensions see page 9 others on request

1) For hazardous areas, the permissible temperatures of the contact model 831 shall apply exclusively (see page 5). These must not be exceeded at the instrument either (for details see operating instructions). If necessary, measures for cooling (e.g. syphon, instrumentation valve, etc.) have to be taken.

2) Ingress protection IP54 with safety version case and connection location lower back mount.

## Switch contacts

### Magnetic snap-action contact model 821

- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- Up to 4 switch contacts per measuring instrument

### Inductive contact model 831

- Suitable for use in hazardous areas with corresponding control unit (model 904.xx)
- Long service life due to non-contact sensor
- Low influence on the indication accuracy
- Fail-safe switching at high switching frequency
- Insensitive to corrosion
- Also available in safety version
- Up to 3 switch contacts per measuring instrument

### Electronic contact model 830 E

- For direct triggering of a programmable logic controller (PLC)
- 2-wire system (option: 3-wire system)
- Long service life due to non-contact sensor
- Low influence on the indication accuracy
- Fail-safe switching at high switching frequency
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

### Reed switch model 851

- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- For direct triggering of a programmable logic controller (PLC)
- Free from wear as without contact
- NS 100: Maximum two change-over contacts per measuring instrument
- NS 160: Maximum one change-over contact per measuring instrument (switching voltages AC < 50 V and DC < 75 V, switch contact not adjustable from outside)

### Switching function

The switching function of the switch is indicated by index 1, 2 or 3.

Model 8xx.1: Normally open (clockwise pointer motion)

Model 8xx.2: Normally closed (clockwise pointer motion)

Models 821.3 Change-over; one contact breaks and one and 851.3: contact makes simultaneously when pointer reaches set point

For further information on switch contacts, see data sheet AC 08.01

## Other versions

- Contact model 821 with separate circuits
- Contact model 821 as change-over contact (break or make simultaneously at the set point)
- Contact model 821 with cable break monitoring (parallel resistance 47 k $\Omega$  and 100 k $\Omega$ )
- Contact materials for contact model 821: Platinum-iridium alloy and gold-silver alloy
- Contacts fixed, without contact adjustment lock
- Contact adjustment lock leaded
- Contact adjustment key fixed
- Connector (instead of cable socket)

## Specifications for instruments with magnetic snap-action contact model 821

Measuring span	Nominal size	Max. number of contacts	Switching current range I	Switch version <sup>1)</sup>
≤ 1.0 bar	100, 160	1	0.02 ... 0.3 A	L
> 1.0 bar	100, 160	1	0.02 ... 0.6 A	S
≤ 1.6 bar	100, 160	2	0.02 ... 0.3 A	L
> 1.6 bar	100, 160	2	0.02 ... 0.6 A	S
≤ 4.0 bar	100	3 or 4	0.02 ... 0.3 A	L
> 4.0 bar	100	3 or 4	0.02 ... 0.6 A	S
≤ 2.5 bar	160	3 or 4	0.02 ... 0.3 A	L
> 2.5 bar	160	3 or 4	0.02 ... 0.6 A	S

1) Design of the contact coil: Version "L" = light-weight, version "S" = heavy

The recommended setting range of the contacts is 25 ... 75 % of the scale (0 ... 100 % on request).

Contact material (standard): Silver-nickel, gold-plated

### Setting the contacts

The recommended minimum clearance between 2 contacts is 20 % of the measuring span.

The switch hysteresis is 2 ... 5 % (typical).

Characteristics	Unfilled instruments		Filled instruments	
	Resistive load		Resistive load	
	Switch version "S"	Switch version "L"	Switch version "S"	Switch version "L"
<b>Rated operating voltage <math>U_{eff}</math></b>	≤ 250 V		≤ 250 V	
<b>Rated operating current</b>				
Switch-on current	≤ 1.0 A	≤ 0.5 A	≤ 1.0 A	≤ 0.5 A
Switch-off current	≤ 1.0 A	≤ 0.5 A	≤ 1.0 A	≤ 0.5 A
Continuous current	≤ 0.6 A	≤ 0.3 A	≤ 0.6 A	≤ 0.3 A
<b>Switching power</b>	≤ 30 W / ≤ 50 VA		≤ 20 W / ≤ 20 VA	

### Recommended contact load with resistive and inductive loads

Operating voltage	Unfilled instruments			Filled instruments		
	Resistive load		Inductive load	Resistive load		Inductive load
	Direct current	Alternating current	cos φ > 0.7	Direct current	Alternating current	cos φ > 0.7
<b>DC 220 V / AC 230 V</b>	100 mA	120 mA	65 mA	65 mA	90 mA	40 mA
<b>DC 110 V / AC 110 V</b>	200 mA	240 mA	130 mA	130 mA	180 mA	85 mA
<b>DC 48 V / AC 48 V</b>	300 mA	450 mA	200 mA	190 mA	330 mA	130 mA
<b>DC 24 V / AC 24 V</b>	400 mA	600 mA	250 mA	250 mA	450 mA	150 mA



## Specifications for instruments with inductive contact model 831

Measuring span	Nominal size	Case version	Max. number of contacts
0.6 bar	100, 160	S1	1
0.6 bar	160	S3	1
1.0 bar	100, 160	S1	2
1.0 bar	100	S3	1
1.0 bar	160	S3	2
≥ 1.6 bar	100, 160	S1, S3	3

Legend:

S1 = Standard version, with blow-out device (per EN 837)

S3 = Safety version, Solidfront (per EN 837)

The recommended setting range of the contacts is 10 ... 90 % of the scale (0 ... 100 % on request).

### Setting of contacts to identical set point

Up to 2 contacts can be set to an identical set point. For a version with 3 contacts this is not possible. The left (no. 1) or right (no. 3) contact may not be set to the same set point as the other 2 contacts. The required displacement is approx. 30°, optionally to the right or to the left.

### Available contact versions

- 831-N
- 831-SN, safety version <sup>1)</sup>
- 831-S1N, safety version <sup>1)</sup>, inverted signal

<sup>1)</sup> only operate with a corresponding isolating amplifier (model 904.3x)

### Permissible temperature ranges

T6	T5 ... T1	T135 °C
-20 ... +60 °C	-20 ... +70 °C	-20 ... +70 °C

For further information on hazardous areas, see operating instructions.

### Associated isolating amplifiers and control units

Model	Version	Ex version
904.28 KFA6 - SR2 - Ex1.W	1 contact	yes
904.29 KFA6 - SR2 - Ex2.W	2 contacts	yes
904.30 KHA6 - SH - Ex1	1 contact	yes - safety equipment
904.33 KFD2 - SH - Ex1	1 contact	yes - safety equipment
904.25 MSR 010-I	1 contact	no
904.26 MSR 020-I	2 contacts	no
904.27 MSR 011-I	Two-point control	no

## Specifications for instruments with electronic contact model 830 E

Measuring span	Nominal size	Case version	Max. number of contacts
0.6 bar	100, 160	S1	1
0.6 bar	160	S3	1
1.0 bar	100, 160	S1	2
1.0 bar	100	S3	1
1.0 bar	160	S3	2
≥ 1.6 bar	100, 160	S1, S3	2

Legend:

S1 = Standard version, with blow-out device (per EN 837)

S3 = Safety version, Solidfront (per EN 837)

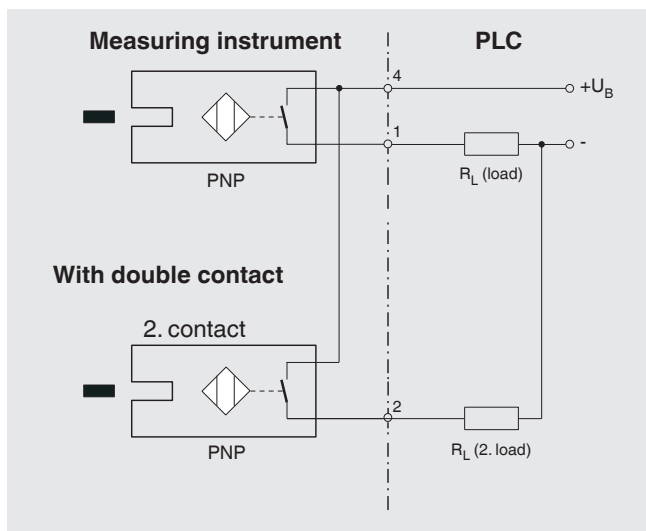
The recommended setting range of the contacts is 10 ... 90 % of the scale (0 ... 100 % on request).

### Setting of contacts to identical set point

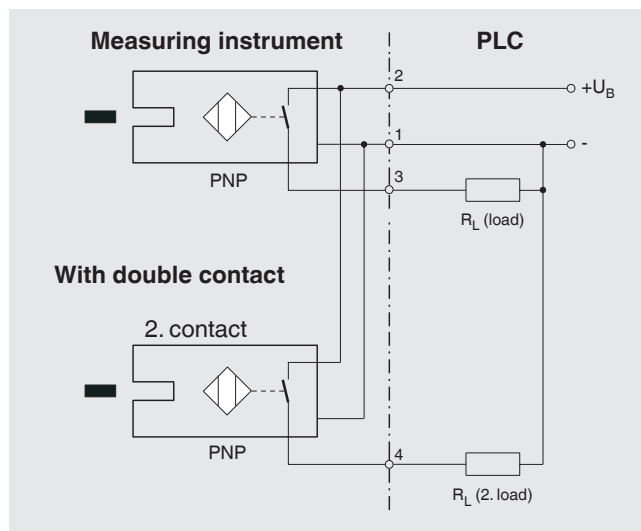
Up to 2 contacts can be set to an identical set point. For a version with 3 contacts this is not possible. The left (no. 1) or right (no. 3) contact may not be set to the same set point as the other 2 contacts. The required displacement is approx. 30°, optionally to the right or to the left.

Characteristics	
Contact version	Normally open, normally closed
Type of output	PNP transistor
Operating voltage	DC 10 ... 30 V
Residual ripple	max. 10 %
No-load current	≤ 10 mA
Switching current	≤ 100 mA
Residual current	≤ 100 μA
Voltage drop (with $I_{max.}$ )	≤ 0.7 V
Reverse polarity protection	Conditional $U_B$ (the switched output 3 or 4 must never be set directly to minus)
Anti-inductive protection	1 kV, 0.1 ms, 1 kΩ
Oscillator frequency	approx. 1,000 kHz
EMC	per EN 60947-5-2

### 2-wire system (standard)



### 3-wire system



## Specifications for instruments with reed switch model 851

Measuring span	Nominal size	Case version	Max. number of contacts
≥ 1.0 bar	100, 160	S1, S3 <sup>1)</sup>	1
≥ 1.6 bar	100, 160	S1, S3 <sup>1)</sup>	2

1) Case version S3 with NS 100

Legend:

S1 = Standard version, with blow-out device (per EN 837)

S3 = Safety version, Solidfront (per EN 837)




Switching power  $P_{\max}$  60 W / 60 VA

Switching current 1 A

Characteristics	
Contact version	Change-over contact
Type of contact	Bistable
Max. switching voltage	AC/DC 250 V
Min. switching voltage	Not required
Switching current	AC/DC 1 A
Min. switching current	Not required
Transport current	AC/DC 2 A
cos φ	1
Switching power	60 W/ VA
Contact resistance (static)	100 mΩ
Insulation resistance	10 <sup>9</sup> Ω
Breakdown voltage	DC 1,000 V
Switching time incl. contact chatter	4.5 ms
Contact material	Rhodium
Switch hysteresis	3 ... 5 %

- The limit values presented here must not be exceeded.
- When using two contacts, these cannot be set to the same point. Depending on the switching function, a minimum clearance of 15 ... 30° is required.
- The setting range of the contacts is 10 ... 90 % of the scale.
- The switching function can be set in manufacturing such that the reed contact will actuate exactly at the required switch point. For this, we need the switching direction to be specified on order.

## Approvals

Logo	Description	Country
 	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment directive</li> <li>■ Low voltage directive</li> <li>■ RoHS directive</li> <li>■ ATEX directive (option) <sup>1)</sup></li> </ul> Hazardous areas - Ex ia Gas [II 2G Ex ia IIC T6/T5/T4 Gb] Dust [II 2D Ex ia IIIB T135°C Db]	European Union
	<b>IECEx (option) <sup>1)</sup></b> Hazardous areas - Ex ia Gas [Ex ia IIC T6/T5/T4 Gb] Dust [Ex ia IIIB T135°C Db]	International
	<b>EAC (option)</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment directive</li> <li>■ Low voltage directive</li> <li>■ Hazardous areas <sup>1)</sup></li> </ul>	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr (option)</b> Metrology, measurement technology	Kazakhstan
-	<b>MTSCHS (option)</b> Permission for commissioning	Kazakhstan
	<b>BelGIM (option)</b> Metrology, measurement technology	Belarus
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

1) Only for instruments with inductive contact model 831

## Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

Approvals and certificates, see website

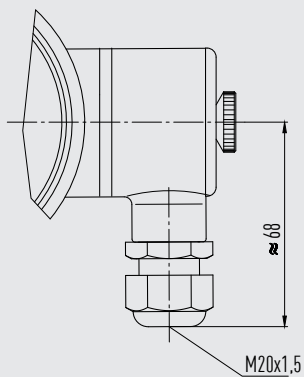
## Accessories

- Panel mounting flange, polished stainless steel
- Surface mounting flange, stainless steel
- Sealings (model 910.17, see data sheet AC 09.08)
- Valves (models IV20/IV21, see data sheet AC 09.19, and models IV10/IV11, see data sheet AC 09.22)
- Syphons (model 910.15, see data sheet AC 09.06)
- Overpressure protector (model 910.13, see data sheet AC 09.04)
- Cooling element (model 910.32, see data sheet AC 09.21)
- Diaphragm seal

# Dimensions in mm

## Cable socket

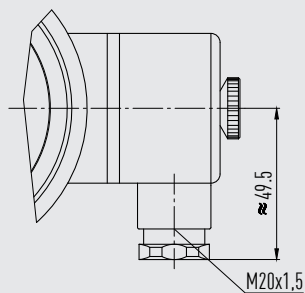
Contact models: 821 and 851



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Only use cable with a diameter of 5 ... 10 mm

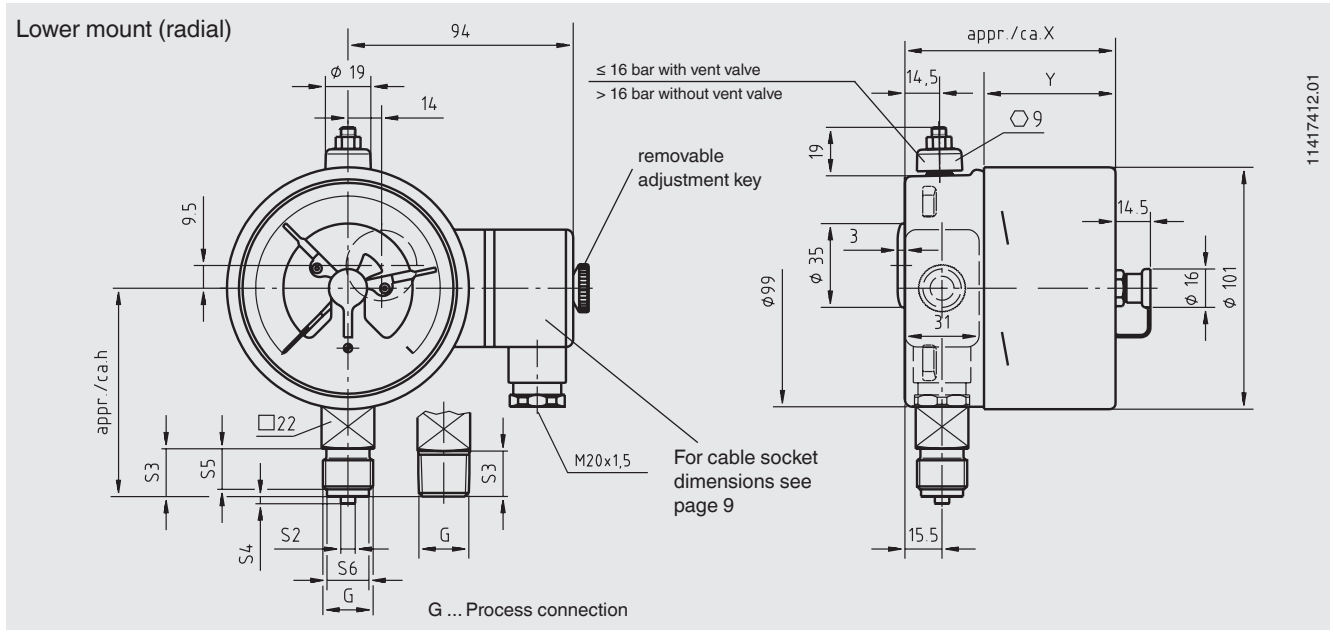
Contact models: 831 und 830 E



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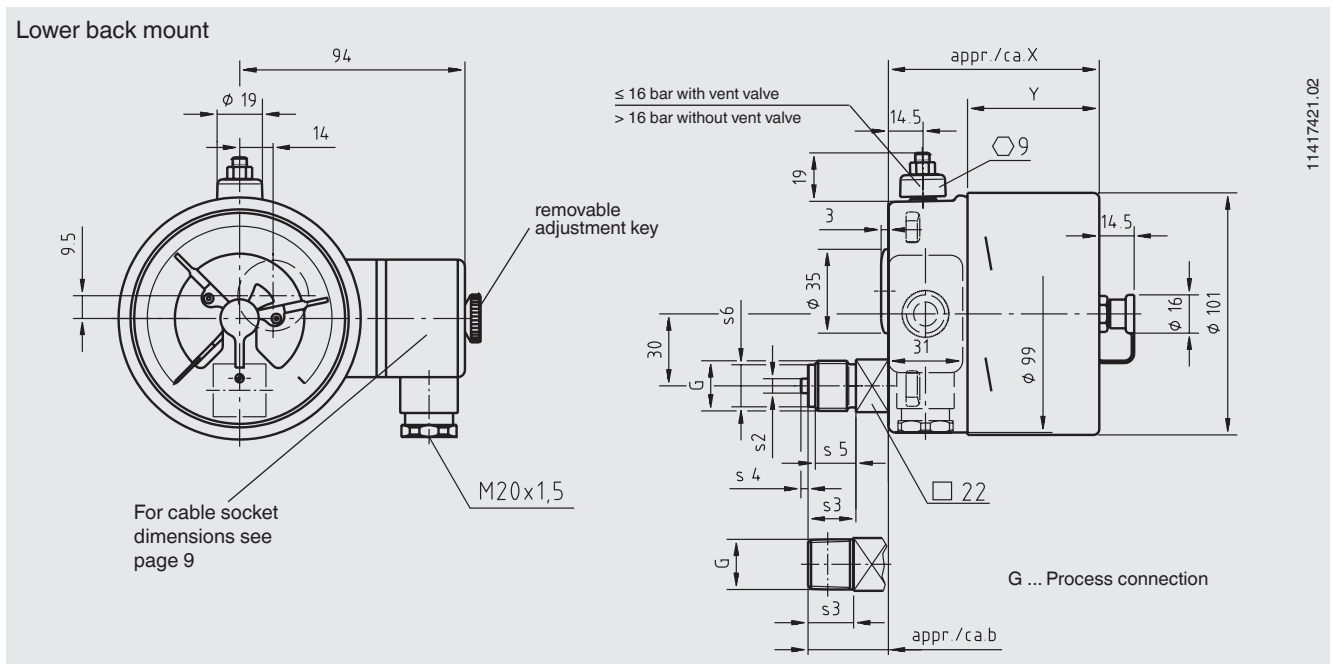
Only use cable with a diameter of 7 ... 13 mm

switchGAUGE model PGS23.100 with switch contact model 821, 831 or 830 E



Type of contact	Dimensions in mm	
	X	Y
Single or double contact	88	55
Double (change-over) contact	113	80
Triple contact	96	63
Quadruple contact	113	80

Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	87	6	20	3	17	17.5
G ¼ B	80	5	13	2	11	9.5
G ⅜ B	83	5.5	16	3	13	13
½ NPT	86	-	19	-	-	-

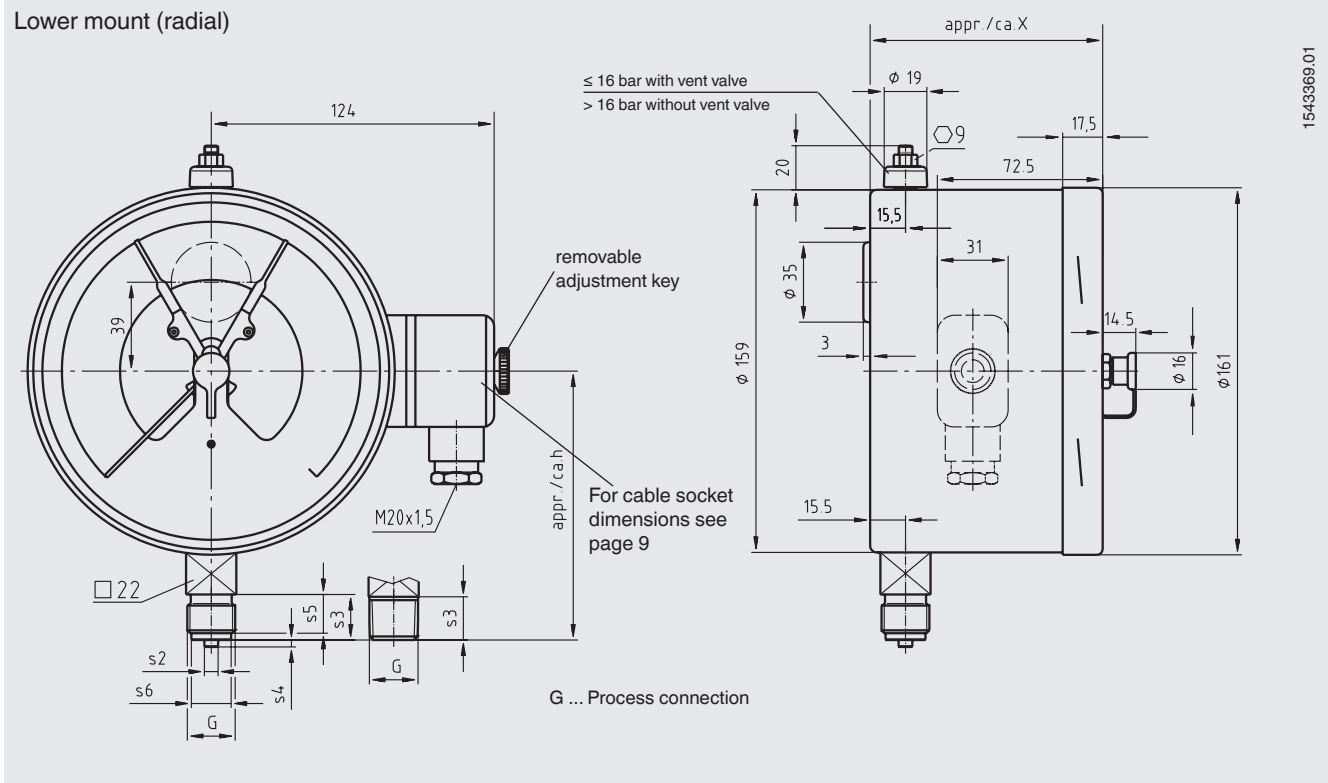


Type of contact	Dimensions in mm	
	X	Y
Single or double contact	88	55
Double (change-over) contact	113	80
Triple contact	96	63
Quadruple contact	113	80

Process connection	Dimensions in mm					
	b	S2	S3	S4	S5	S6
G ½ B	33.5	6	20	3	17	17.5
G ¼ B	26.5	5	13	2	11	9.5
G ⅜ B	29.5	5.5	16	3	14	13
½ NPT	32.5	-	19	-	-	-



switchGAUGE model PGS23.160 with switch contact model 821, 831 or 830 E



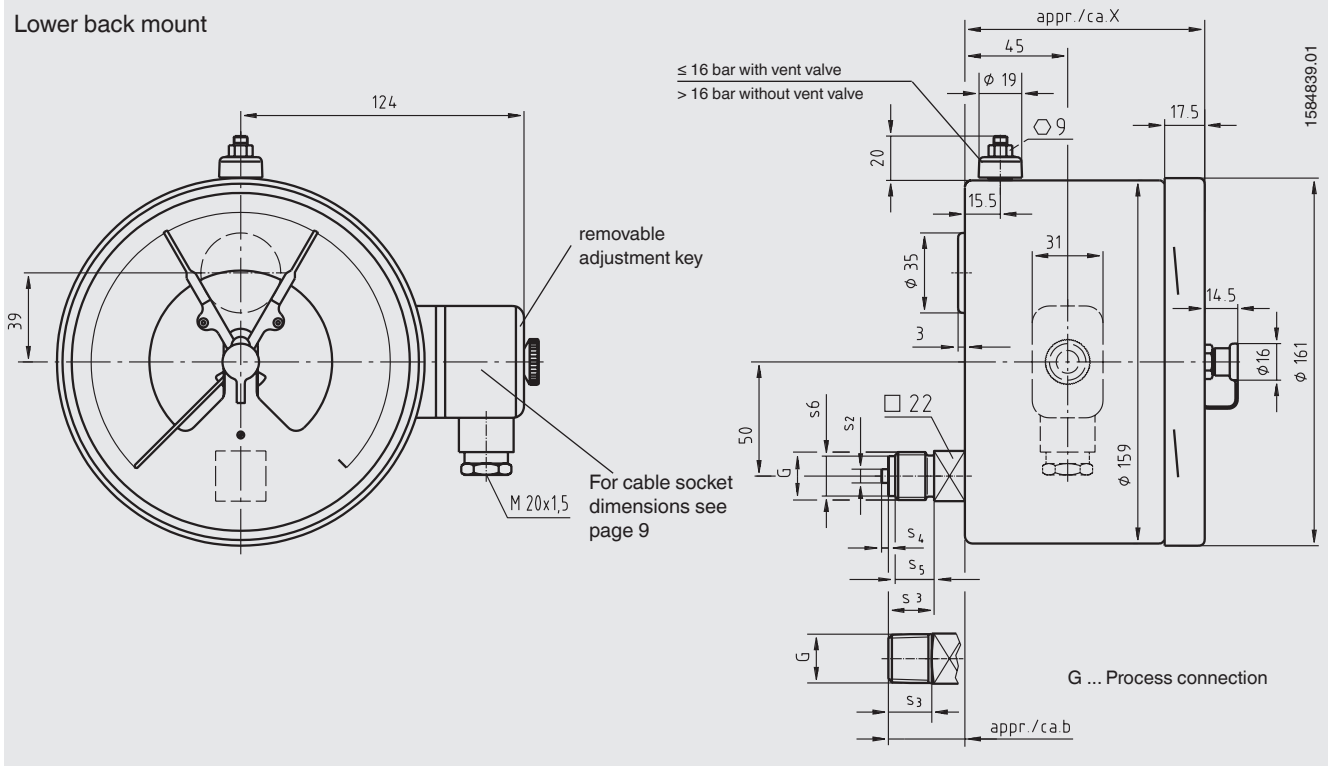
Type of contact	Dimensions in mm
	X
Single, double or triple contact	102 <sup>1)</sup>
Double (change-over) contact, quadruple contact	116 <sup>1)</sup>

Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	118	6	20	3	17	17.5
G ¼ B	111	5	13	2	11	9.5
G ¾ B	114	5.5	16	3	14	13
½ NPT	117	-	19	-	-	-

1) Plus 14 mm with pressure ranges ≥ 0 ... 100 bar



Lower back mount

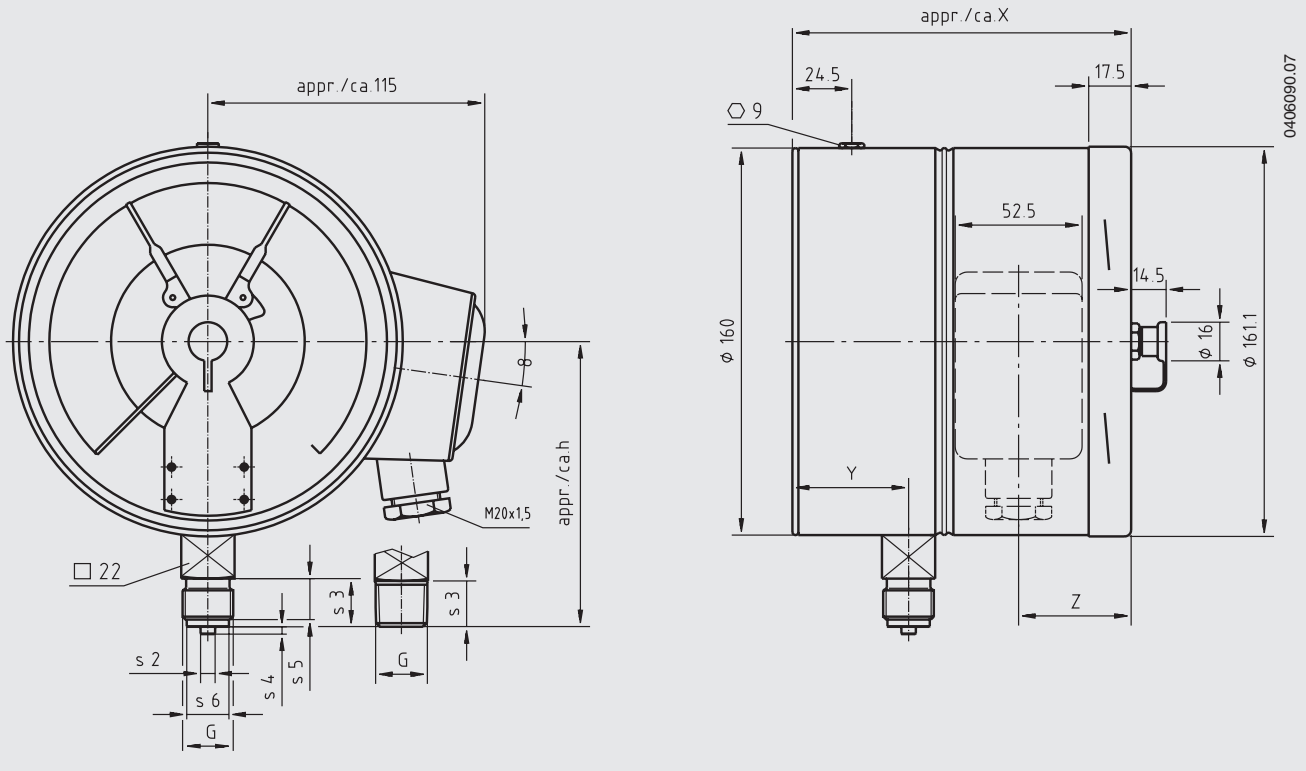


Type of contact	Dimensions in mm
	X
Single, double or triple contact	105
Double (change-over) contact, quadruple contact	119

Process connection	Dimensions in mm					
	b	S2	S3	S4	S5	S6
G ½ B	33.5	6	20	3	17	17.5
G ¼ B	26.5	5	13	2	11	9.5
G ⅜ B	29.5	5.5	16	3	14	13
½ NPT	32.5	-	19	-	-	-

switchGAUGE model PGS23.160 (safety version) with switch contact model 821, 831 or 830 E

Lower mount (radial)



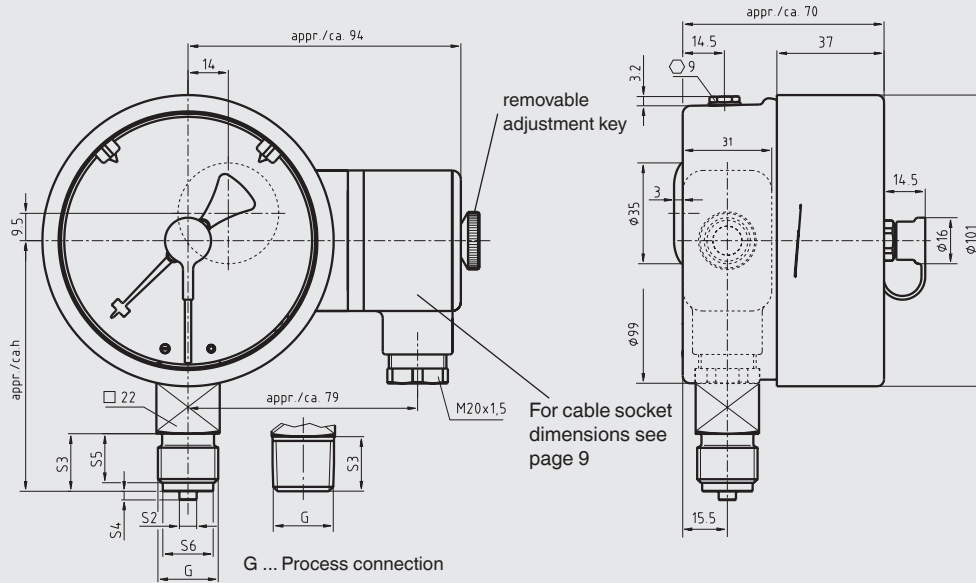
Type of contact	Dimensions in mm		
	X	Y	Z
Single or double contact	141	30.5 <sup>1)</sup>	48
Triple contact	153.5	30.5 <sup>1)</sup>	60.5

Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	118	6	20	3	17	17.5
½ NPT	117	-	19	-	-	-
M20 x 1.5	118	6	20	3	17	17.5

1) Plus 17 mm with pressure ranges ≤ 0 ... 60 bar

switchGAUGE model PGS23.100 with switch contact model 851.3 or 851.33

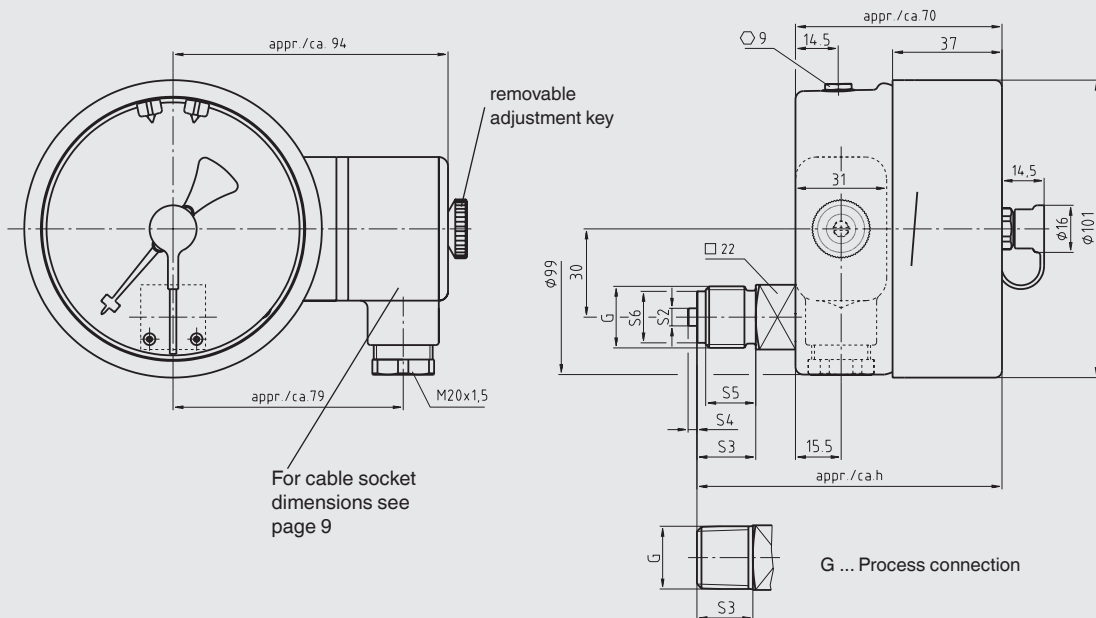
Lower mount (radial)



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Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	87	6	20	3	17	17.5
G ¼ B	80	5	13	2	11	9.5
G ¾ B	83	5.5	16	3	14	13
½ NPT	86	-	19	-	-	-

Lower back mount

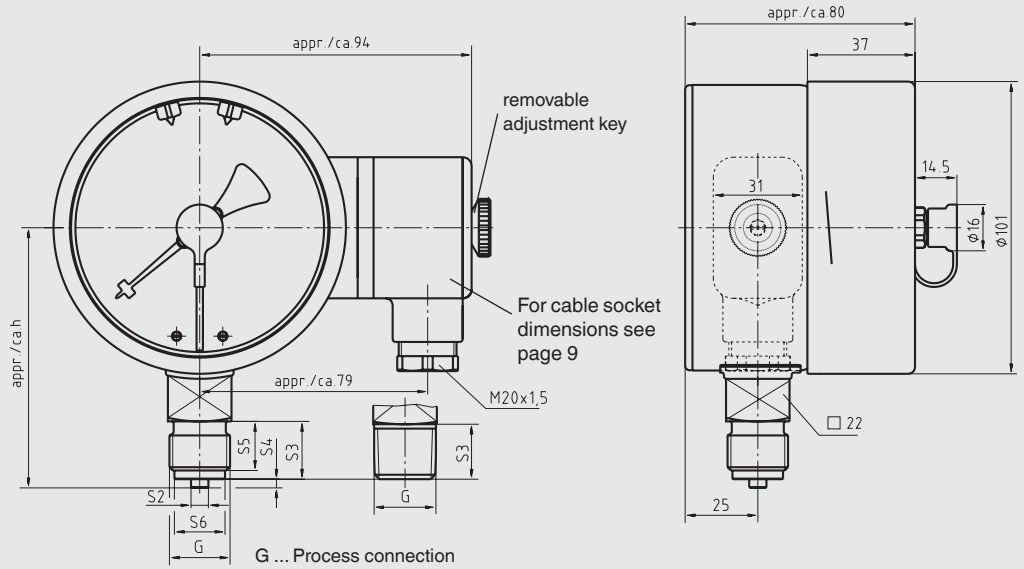


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Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	103	6	20	3	17	17.5
G ¼ B	96	5	13	2	11	9.5
G ¾ B	99	5.5	16	3	14	13
½ NPT	102	-	19	-	-	-

switchGAUGE model PGS23.100 (safety version) with switch contact model 851.3 or 851.33

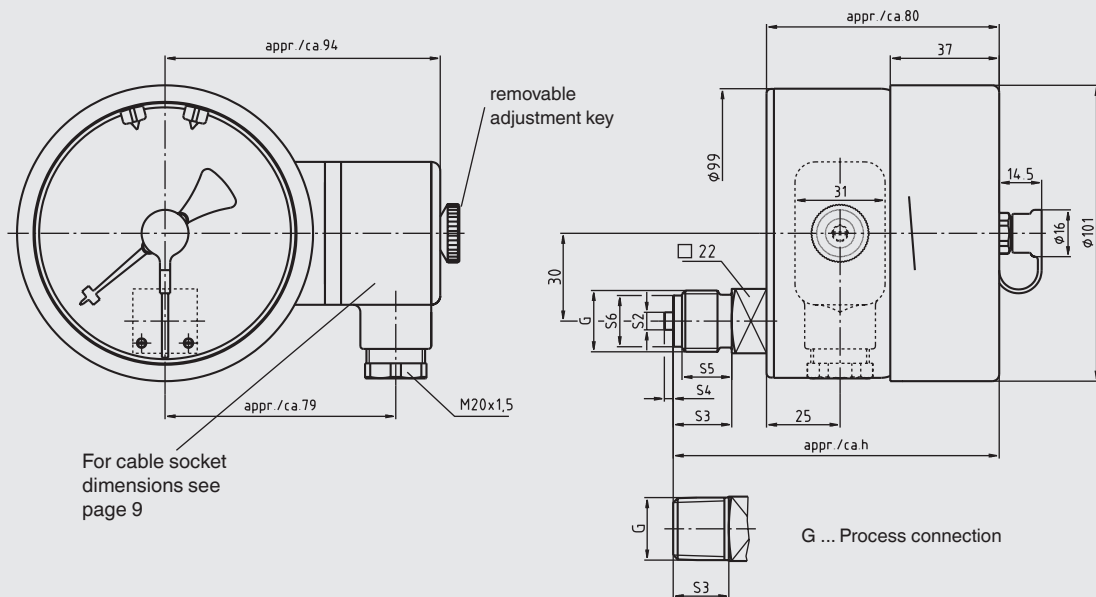
Lower mount (radial)



14034797.01

Process connection	Dimensions in mm					
	$h \pm 1$	S2	S3	S4	S5	S6
G ½ B	87	6	20	3	17	17.5
G ¼ B	80	5	13	2	11	9.5
G ¾ B	83	5.5	16	3	13	13
½ NPT	86	-	19	-	-	-

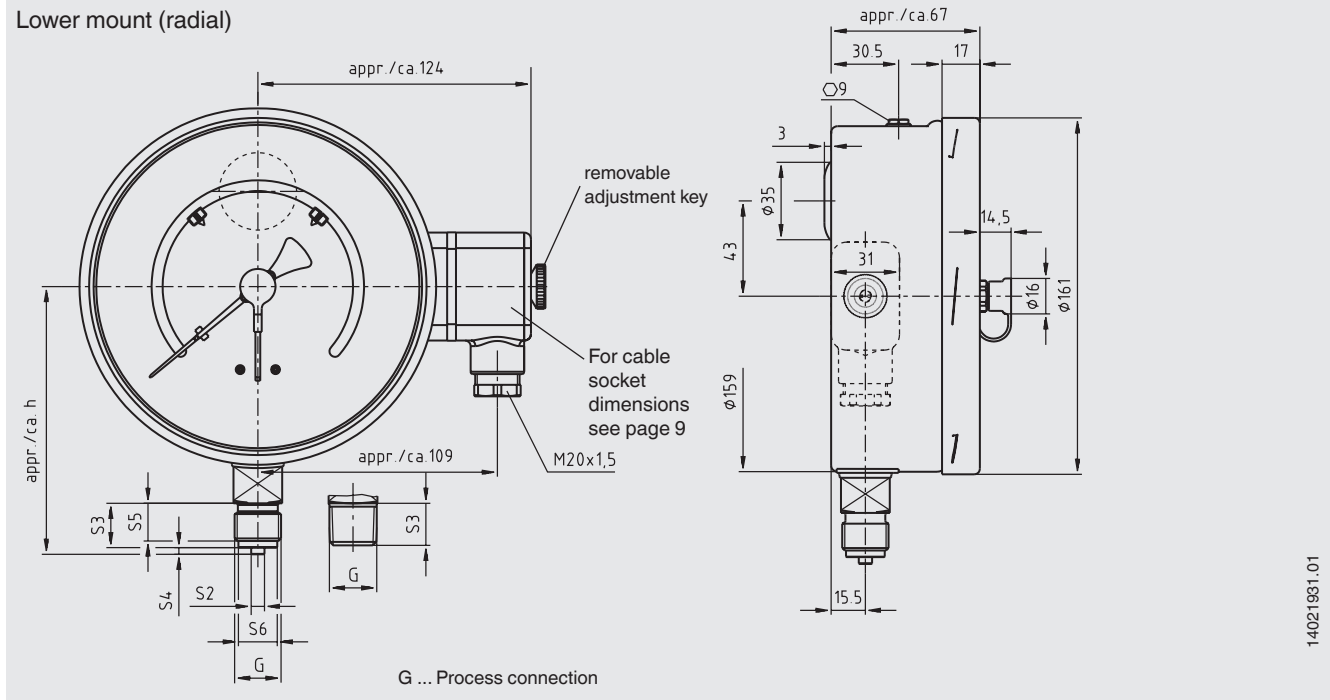
Lower back mount



14034471.01

Process connection	Dimensions in mm					
	$h \pm 1$	S2	S3	S4	S5	S6
G ½ B	112	6	20	3	17	17.5
G ¼ B	105	5	13	2	11	9.5
G ¾ B	108	5.5	16	3	14	13
½ NPT	111	-	19	-	-	-

switchGAUGE model PGS23.160 with switch contact model 851.3 or 851.33



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Process connection	Dimensions in mm					
	h ±1	S2	S3	S4	S5	S6
G ½ B	118	6	20	3	17	17.5
G ¼ B	111	5	13	2	11	9.5
G ⅜ B	114	5.5	16	3	14	13
½ NPT	117	-	19	-	-	-

**Ordering information**

Model / Nominal size / Contact model / Contact version / Connection location / Process connection / Options

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