Bourdon tube pressure gauge with one or two fixed switch contacts, stainless steel case
Model PGS21

Applications

- Pressure gauge for indicating and monitoring the pressure in tanks and for signalling leaks
- General industrial applications
- Machine building

Special features

- High switching reliability and long service life
- Design per EN 837-1
- Switch contacts fixed to customer requirements
- Increased ingress protection, IP 65

Description

The model PGS21 switchGAUGE is a combination of a Bourdon tube pressure gauge and a pressure switch. It offers the usual analogue display, which can be read on-site irrespective of the power supply, and in addition the possibility to switch a potential-free electrical signal.

One or two fixed switch points are factory-set to customer requirements, between 10 and 90 % of the scale range, and indicated on the dial by red mark pointers. Depending on the pressure gauge's pointer position, the circuit will be opened or closed. Thus the switchGAUGE can be used actively for process monitoring, for example to control the level of a gas cylinder or a hydraulic circuit.

The switchGAUGE is available as standard in scale ranges from 0 ... 2.5 to 0 ... 400 bar with an accuracy class of 2.5 and a 1 m round cable for the electrical connection. Through various options (e.g. other scale ranges, higher accuracy class, other cable lengths, plug connection) the pressure measuring instrument can be matched exactly to the customer-specific requirements of each application.

The instrument has been designed in accordance with EN 837-1 and fulfils all the requirements within it. Furthermore it features increased ingress protection of IP 65 and can therefore be offered with optional liquid filling to increase its vibration resistance.
### Standard version

**Design**
EN 837-1

**Nominal size in mm**
40, 50, 63 (double contact only with NS 50)

**Accuracy class**
2.5

**Switch point tolerance**
Factory-set
With single contact: ± 2.5 % of full scale value
With double contact: ± 4 % of full scale value

**Scale ranges**
0 ... 2.5 to 0 ... 400 bar

**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. ±0.4 %/10 K of the span

**Process connection**
Copper alloy, lower mount (LM) or centre back mount (CBM) 1)
NS 40: G 1/8 B (male), 14 mm flats
NS 50, 63: G 1/4 B (male), 14 mm flats

1) NS 40 only centre back mount

**Pressure element**
Copper alloy
C-type or helical type

**Movement**
Copper alloy

**Dial**
NS 40, 50: Aluminium, white
NS 63: Stainless steel, white

**Pointer**
Plastic, black

**Case**
Stainless steel

**Window**
Polycarbonate

### Ingress protection
IP 65 per EN 60529 / IEC 529
see also option, electrical connection via connector

### Helium leak test
Leak rate 10⁻⁵ mbar*l/s

### Electrical data
Switching voltage: DC / AC 4.5 ... 24 V
Switching current: 5 ... 100 mA
Contact load: max. 2.4 W
Switch contact: Normally closed (NC) or normally open (NO)
Double contact only with NS 50

<table>
<thead>
<tr>
<th>Index</th>
<th>Designation</th>
<th>Symbol</th>
<th>Switching function / setting direction</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normally open (NO)</td>
<td><img src="image1" alt="Symbol" /></td>
<td>Contact makes with rising pressure or clockwise pointer motion (standard)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Normally closed (NC)</td>
<td><img src="image2" alt="Symbol" /></td>
<td>Contact breaks with falling pressure or anticlockwise pointer motion</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>Normally open / normally closed (NO-NC)</td>
<td><img src="image3" alt="Symbol" /></td>
<td>See switching function or setting direction for single contact</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Normally open / normally closed (NO-NO)</td>
<td><img src="image4" alt="Symbol" /></td>
<td>See switching function or setting direction for single contact</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Normally closed / normally closed (NC-NC)</td>
<td><img src="image5" alt="Symbol" /></td>
<td>See switching function or setting direction for single contact</td>
<td></td>
</tr>
</tbody>
</table>

Contact setting: fixed to customer requirements (between 10 and 90 % of the scale range)

### Potential-free

### Adjustability of contacts

### Electrical connection
Cable outlet, cable ends tinned for soldered joints (per standard IPC-WHMA-A-620A), standard length 1 m

<table>
<thead>
<tr>
<th>Single contact</th>
<th>Double contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>red: U1+</td>
<td>red: U1+ (common)</td>
</tr>
<tr>
<td>black: SP 1</td>
<td>orange: SP 1</td>
</tr>
<tr>
<td></td>
<td>black: SP 2</td>
</tr>
</tbody>
</table>
Options
- Other process connection
- Liquid filling (silicone oil)
- Other scale ranges
- Adjustable contact (model PGS11, data sheet PV 21.01)
- Electrical connection via connector (NS 50, 63)
- Accuracy class 1.6 %
- Other cable length
- Instruments with VdS approval (only NS 50, data sheet SP 21.03)

Option
Electrical connection via connector (NS 50, 63)

Angular connector EN 175301-803-C

<table>
<thead>
<tr>
<th>Single contact</th>
<th>Double contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: U_B+</td>
<td>1: U_B+ (common)</td>
</tr>
<tr>
<td>2: SP 1</td>
<td>2: SP 1</td>
</tr>
<tr>
<td>3: SP 2</td>
<td></td>
</tr>
</tbody>
</table>

Circular connector M12 x 1

<table>
<thead>
<tr>
<th>Single contact</th>
<th>Double contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: U_B+</td>
<td>1: U_B+ (common)</td>
</tr>
<tr>
<td>4: SP 1</td>
<td>4: SP 1</td>
</tr>
<tr>
<td>2: SP 2</td>
<td></td>
</tr>
</tbody>
</table>

Circular connector M8 x 1

<table>
<thead>
<tr>
<th>Single contact</th>
<th>Double contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: U_B+</td>
<td>1: U_B+ (common)</td>
</tr>
<tr>
<td>4: SP 1</td>
<td>4: SP 1</td>
</tr>
<tr>
<td>3: SP 2</td>
<td></td>
</tr>
</tbody>
</table>

If the IP ingress protection of the connector is lower than that of the pressure gauge, then this determines the overall ingress protection of the instrument.

CE conformity
Pressure equipment directive
97/23/EC, PS > 200 bar, module A, pressure accessory

Approvals
- GOST-R, import certificate, Russia
- CRN, safety (e.g. electr. safety, overpressure, ...), Canada

Certificates 1)
- 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)

1) Option

Approvals and certificates, see website
## Dimensions in mm

### Standard version

**NS 40, centre back mount (CBM)**
- Single contact

**NS 50, lower mount (LM)**
- Single contact
- Double contact

**NS 50, centre back mount (CBM)**
- Single contact
- Double contact
### NS 63, lower mount (LM)

**Single contact**

<table>
<thead>
<tr>
<th>NS</th>
<th>Type of contact</th>
<th>Dimensions in mm</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Single contact</td>
<td>D 40, a1 - - b1 ±0.5 b2 ±1 G 1/8 B h SW</td>
<td>0.10</td>
</tr>
<tr>
<td>50</td>
<td>Single contact</td>
<td>D 55, a1 - - b1 ±0.5 b2 ±1 G 1/4 B h SW</td>
<td>0.18</td>
</tr>
<tr>
<td>50</td>
<td>Double contact</td>
<td>D 55, a1 - - b1 ±0.5 b2 ±1 G 1/4 B h SW</td>
<td>0.18</td>
</tr>
<tr>
<td>63</td>
<td>Single contact</td>
<td>D 68, a1 - - b1 ±0.5 b2 ±1 G 1/4 B h SW</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Process connection per EN 837-1 / 7.3

### Ordering Information

**Model / Nominal size / Scale range / Connection size / Connection location / Switch point and function / Electrical connection / Options**

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