

Differential pressure gauge with switch contacts For the process industry

Models DPGS43HP.1x0, high overload safety up to 40, 100, 250 or 400 bar

WIKA data sheet PV 27.13



for further approvals see
page 4

switchGAUGE

Applications

- Control and regulation of process values
- Monitoring of plants and switching of circuits
- For measuring locations with a high differential pressure overload and/or high working pressures (static pressures), also in aggressive environments
- Easy-to-read, analogue on-site display needing no external power
- Pump monitoring and control, filter monitoring, level measurement on closed vessels

Special features

- Differential pressure measuring ranges from 0 ... 60 mbar
- High working pressure (static pressure) and high overload safety, selectable up to 40, 100, 250 or 400 bar
- Measuring cell liquid damping against rapid pressure changes
- Instruments with inductive contacts for use in hazardous areas with ATEX approval
- Instruments with electronic contact for PLC applications

Description

Wherever the process pressure has to be indicated locally and, at the same time, circuits need to be switched, the model DPGS43HP.1x0 switchGAUGE finds its use.

Switch contacts (electrical alarm 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.



Differential pressure gauge model DPGS43HP.100 with switch contact model 821.21

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 837-3) 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 – for requirements to ATEX – or electronic contacts for triggering a PLC are available.

Standard version

Version

Highest overload safety either side, pressure ratings PN 40, 100, 250 or 400, system fill fluid of the measuring cell acts as the damping of the display

Nominal size in mm

100, 160

Accuracy class

1.6 (Monel version: 2.5)

Overload safety and max. operating pressure (static pressure)

either side max. 40, 100, 250 or 400 bar

Scale ranges

Instruments with PN 40 and 100:

0 ... 60 mbar up to 0 ... 160 mbar (measuring cell □ 140)

0 ... 0.25 bar up to 0 ... 40 bar (measuring cell □ 82)

Instruments with PN 250:

0 ... 60 mbar up to 0 ... 250 mbar (measuring cell □ 140)

0 ... 0.4 bar up to 0 ... 40 bar (measuring cell □ 82)

Instruments with PN 400:

0 ... 0.4 bar up to 0 ... 40 bar (measuring cell □ 86)

Pressure limitation

Steady: Full scale value

Fluctuating: 0.9 x full scale value

Permissible temperature

Ambient: -20 ... +60 °C

Medium: +100 °C maximum

Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. $\pm 0.5 \%$ /10 K of full scale value

Measuring flanges with process connection (wetted)

Stainless steel 316L, lower mount, 2 x G 1/2 female

Flange connecting screws

PN 40 / 100: Stainless steel

PN 250 / 400: Steel, corrosion-protected

Pressure elements (wetted)

≤ 0.25 bar: Stainless steel 1.4571

> 0.25 bar: NiCr alloy (Inconel)

Sealings (wetted)

FPM/FKM

Measuring cell

Chrome steel

Venting of the media chambers (wetted)

Stainless steel 316L

Instruments with PN 40 and 100:

Standard for scale ranges ≤ 0.16 bar

(option for scale ranges ≥ 0.25 bar!)

Instruments with PN 250 and 400:

Standard for scale ranges ≤ 0.25 bar

(option for scale ranges ≥ 0.4 bar!)

Movement

Stainless steel

Dial

Aluminium, white, black lettering

Pointer

Aluminium, black

Zero point setting

by means of adjustment appliance

Case / Bayonet ring

Stainless steel

Window

Laminated safety glass

System fill fluid of the measuring cell

Silicone oil

Others on request

Mounting

according to affixed symbols

⊕ high pressure, ⊖ low pressure

Mounting

■ Rigid measuring lines

■ Drilled mounting holes at the back of the measuring cell

■ Panel mounting flange (option)

■ Instrument mounting bracket for wall or pipe mounting (option)

Electrical connection

Cable socket

Ingress protection per IEC/EN 60529

IP54 (with liquid filling IP65)

Options

- Liquid filling
- Sealings (model 910.17, see data sheet AC 09.08)
- Venting of the media chambers for scale ranges ≥ 0.25 bar or ≥ 0.4 bar
- Measuring cell filling with special medium, e.g. for use in oxygen applications
- Wetted parts made of special material
- Differential process connection per EN 61518
- Other process connections, e.g. 2 x G 1/2 B male thread or 2 x 1/2 NPT
- Back mount connection or connection at 12 o'clock
- Medium temperature > 100 °C
- Permissible ambient temperature $-40 \dots +60$ °C (silicone oil filling)
- Panel mounting flange
- Instrument mounting bracket for wall or pipe mounting, lacquered steel or stainless steel
- Monel version
- Pressure compensating valve (data sheet AC 09.11)
- Inductive contacts also in safety version (SN, S1N)

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

- Long service life due to non-contact sensor
- Additional control unit required (model 904.xx)
- With corresponding control unit suitable for use in zone 1 / 21 (2 GD) hazardous areas
- Low influence on the indication accuracy
- Fail-safe switching at high switching frequency
- Insensitive to corrosion
- 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
- Also suitable 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 and 851.3: Change-over; one contact breaks and one contact makes simultaneously when pointer reaches set point

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

Approvals

| Logo | Description | Country |
|---|---|-----------------------------|
|  | EU declaration of conformity <ul style="list-style-type: none"> ■ EMC directive ■ Low voltage directive ■ RoHS directive ■ ATEX directive (option) | European Union |
|  | EAC (option) <ul style="list-style-type: none"> ■ EMC directive ■ Pressure equipment directive ■ Low voltage directive ■ Hazardous areas | Eurasian Economic Community |
|  | GOST (option) Metrology, measurement technology | Russia |
| - | MTSCHS (option) Permission for commissioning | Kazakhstan |
| - | CRN Safety (e.g. electr. safety, overpressure, ...) | Canada |

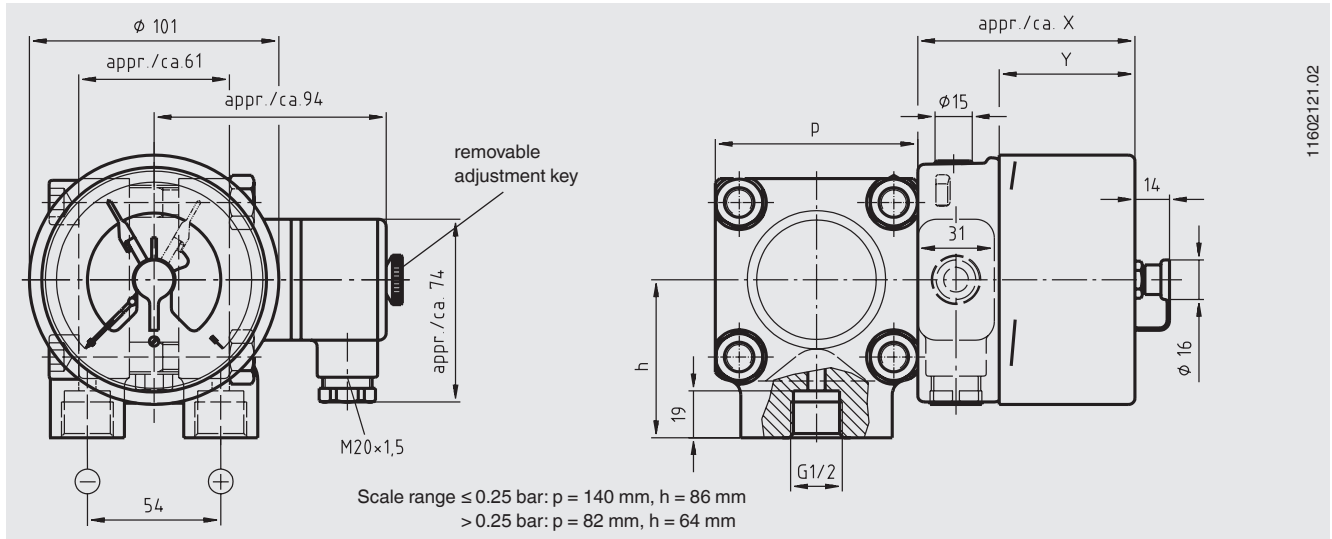
Certificates (option)

- 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

Dimensions in mm

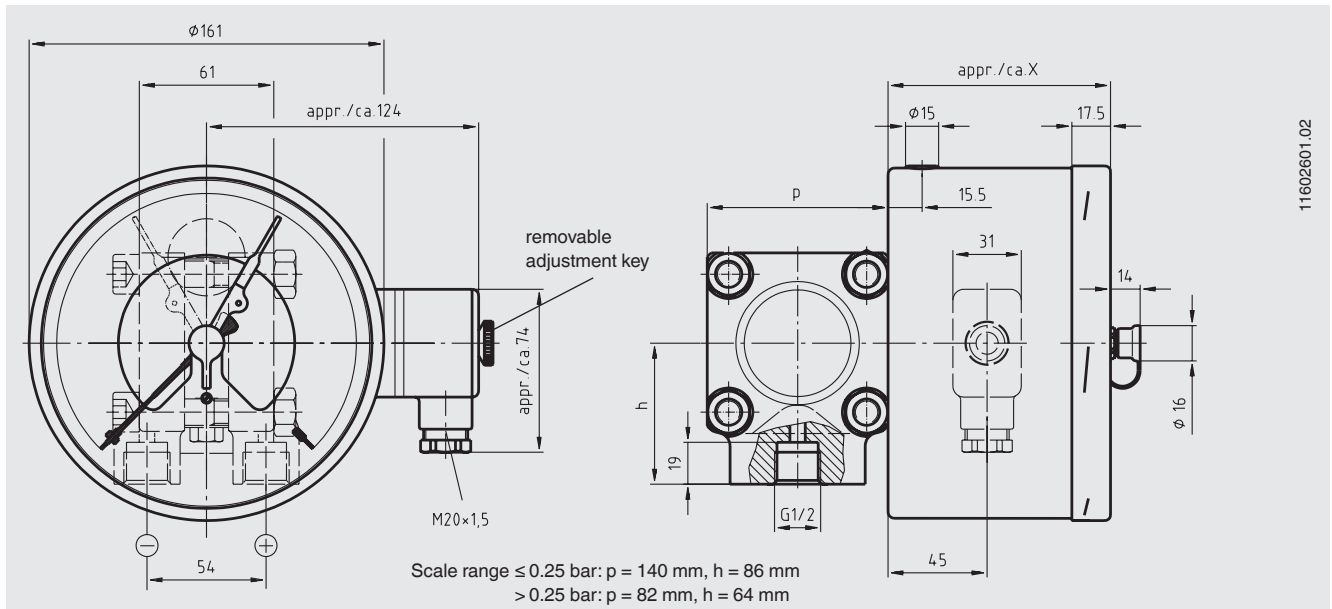
switchGAUGE model DPGS43HP.100 with switch contact model 821, 831 or 830 E



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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 |

switchGAUGE model DPGS43HP.160 with switch contact model 821, 831 or 830 E



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

