

# Diaphragm pressure gauge with electrical output signal

## Stainless steel, safety version

### High overpressure safety up to 400 bar

### Models PGT43HP.100 and PGT43HP.160

WIKA data sheet PV 14.07



for further approvals  
see page 5

**intelliGAUGE®**

#### Applications

- Acquisition and display of process values
- Transmission of process values to the control room, 4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V
- For measuring points with increased overpressure of 40, 100 or 400 bar
- Easy-to-read, analogue on-site display needing no external power
- Safety-related applications

#### Special features

- "Plug-and-play" with no configuration necessary
- Measuring ranges from 0 ... 16 mbar
- Wide choice of special materials
- For gaseous, liquid and aggressive media, also in aggressive ambience, due to all stainless steel construction
- Safety pressure gauge S3 per EN 837

#### Description

At any point where the process pressure has to be indicated locally, and, at the same time, a signal is wanted to be transmitted to a central controller or remote control room, the model PGT43HP intelliGAUGE (US Patent No. 8,030,990) can be used.

Due to the metallic construction of the pressure elements, these instruments have a high overpressure safety in the ranges of 40, 100 and 400 bar.

Through the combination of a high-quality mechanical measuring system and precise electronic signal processing, the process pressure can be read securely, even if the power supply is lost. The intelliGAUGE model PGT43HP fulfils all safety-related requirements of the relevant standards and regulations for the on-site display of the operating pressure of pressure vessels. An additional measuring point for mechanical pressure indication can thus be saved.

The model PGT43HP is based upon a model 432.36 high-quality, stainless steel safety pressure gauge with a nominal



**Diaphragm pressure gauge model PGT43HP.100**

size of 100 or 160. The pressure gauge is manufactured in accordance with EN 837-3.

The rugged design of the diaphragm measuring system produces a pointer rotation proportional to the pressure. An electronic angle encoder, proven in safety-critical automotive applications, determines the position of the pointer shaft - it is a non-contact sensor and therefore completely free from wear and friction. From this, the electrical output signal proportional to the pressure, e.g. 4 ... 20 mA, is produced.

The electronic WIKA transmitter, integrated into the high-quality mechanical pressure gauge, combines the advantages of electrical signal transmission with the advantages of a local mechanical display.

The measuring span (electrical output signal) is set automatically along with the mechanical display, i.e. the scale over the full display range corresponds to 4 ... 20 mA. The electrical zero point can also be set manually.

## Standard version

### Nominal size in mm

100, 160

### Accuracy class

1.6

### Scale range

0 ... 16 mbar to 0 ... 250 mbar

0 ... 400 mbar to 0 ... 40 bar

or all other equivalent vacuum or combined pressure and vacuum ranges

### Overpressure safety

40, 100 or 400 bar

### Process connection with lower measuring flange

Stainless steel 316L, G ½ B (male), 22 mm flats

### Pressure element

≤ 0.25 bar: Stainless steel 316L

> 0.25 bar: NiCr-alloy (Inconel)

### Sealing towards the pressure chamber

FPM/FKM

### Movement

Brass

### Dial

Aluminium, white, black lettering

### Pointer

Adjustable pointer, black aluminium

### Case with upper measuring flange

Stainless steel, safety version with solid baffle wall (Solid-front) and blow-out back, scale ranges ≤ 0 ... 16 bar with compensating valve to vent case, ingress protection IP 54

### Window

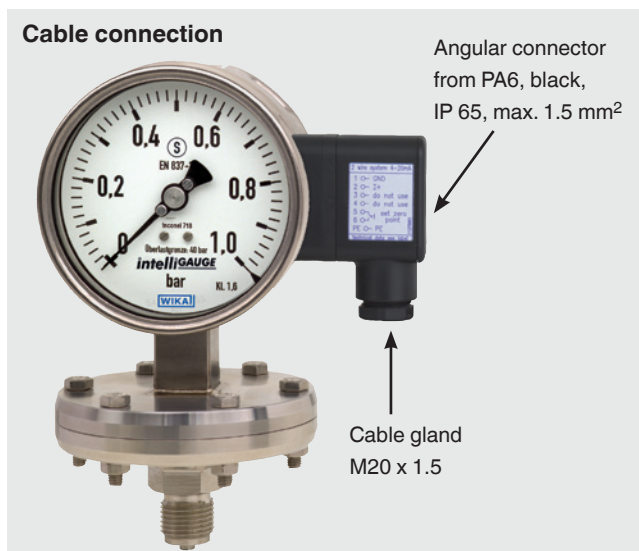
Laminated safety glass

### Bezel ring

Cam ring (bayonet type), stainless steel

## Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Vacuum safe up to -1 bar
- Max. medium temperature +200 °C
- Higher indication accuracy, class 1.0
- Output signal 0 ... 20 mA, 0 ... 10 V
- Open connecting flanges per DIN/ASME from DN 15 to DN 80 (preferred nominal widths DN 25 and 50 or DN 1" and 2"; see data sheet IN 00.10)
- Wetted parts made of special materials, high overpressure safety up to 10 bar (flange Ø 160 mm) or 40 bar (flange Ø 100 mm); PTFE, Hastelloy, Monel, nickel, tantalum, titanium
- Additional wall bracket for model 432.36, high overpressure safety up to 400 bar
- Filling liquid silicone M50
- Window in polycarbonate (max. ambient temperature 80 °C)
- Switch contacts (see data sheet AC 08.01)



## Special version

### Model 432.36, high overpressure safety up to 400 bar

Scale ranges ≤ 0.25 bar flange Ø 190 mm

> 0.25 bar flange Ø 120 mm

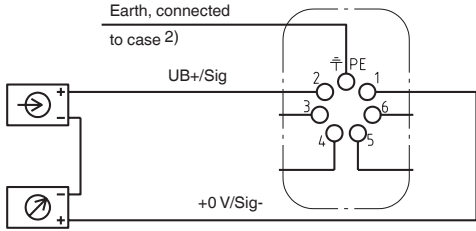
Flange connecting screws: Steel, corrosion-protected

Note: For increased vibration loads (> 0.5 g) use an additional wall bracket (see options).

## Specifications

## intelliGAUGE models PGT43HP.100, PGT43HP.160

### Electrical data

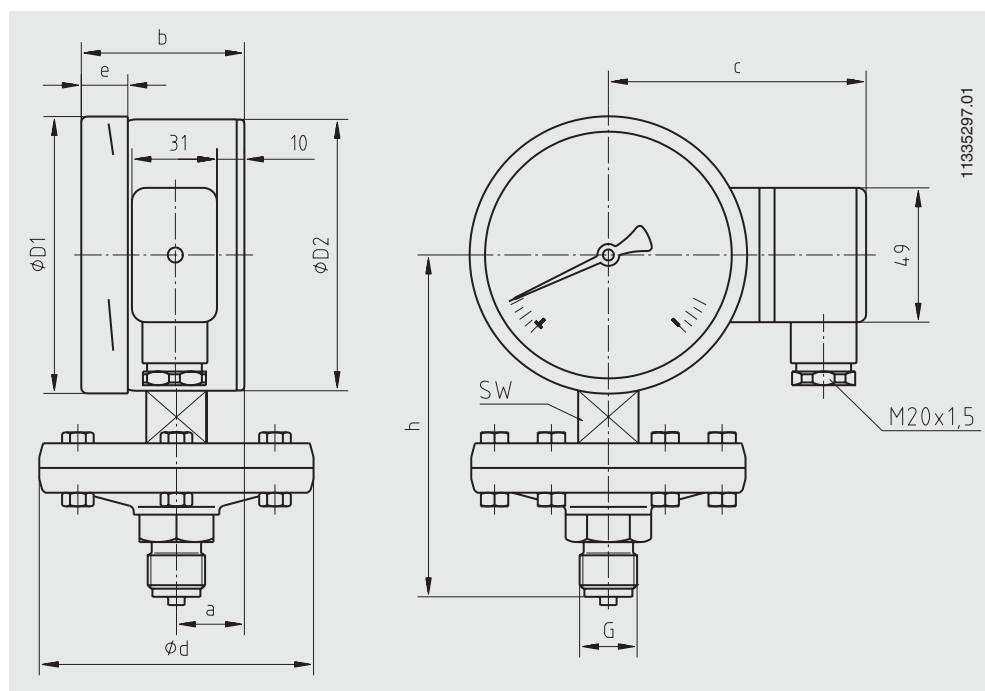
Power supply $U_B$	DC V	$12 < U_B \leq 30$ (min. 14 with Ex version)
Influence of power supply	% FS/10 V	$\leq 0.1$
Permissible residual ripple of $U_B$	%	$\leq 10$
Output signal	Variant 1 Variant 2 Variant 3 Variant 4	4 ... 20 mA, 2-wire, passive, per NAMUR NE 43 4 ... 20 mA, per ATEX Ex II 2G Ex ia IIC T4 / T5 / T6 0 ... 20 mA, 3-wire 0 ... 10 V, 3-wire
Permissible max. load $R_A$	Variant 1 - 3 Variant 4	$R_A \leq (U_B - 12 \text{ V})/0.02 \text{ A}$ with $R_A$ in Ohm and $U_B$ in Volt, however max. 600 $\Omega$ 100 k $\Omega$
Effect of load (variant 1 - 3)	% FS	$\leq 0.1$
Impedance at voltage output		0.5 $\Omega$
Electrical zero point		through a jumper across terminals 5 and 6 (see operating instructions)
<ul style="list-style-type: none"> <li>■ Long-term stability of electronics</li> <li>■ Electr. output signal</li> </ul>	% FS/a	$< 0.3$ $\leq 1 \%$ of the measuring span
Linearity	% of span	$\leq 1.0 \%$ (terminal method)
Resolution		0.13 % of full scale value (10 Bit resolution at 360°)
Refresh rate (measuring rate)		600 ms
Safety-related maximum values		Ex version
<ul style="list-style-type: none"> <li>■ Power supply <math>U_i</math></li> <li>■ Short circuit rating <math>I_i</math></li> <li>■ Power <math>P_i</math></li> <li>■ Internal capacitance <math>C_i</math></li> <li>■ Internal inductance <math>L_i</math></li> </ul>	DC V mA W nF mH	max. 30 max. 100 max. 1 12 negligible
Electrical connection		via angular connector, 180° rotatable, wire protection, cable gland M20 x 1.5, incl. strain relief, connection cable: Outer diameter 7 ... 13 mm, conductor cross-section 0.14 ... 1.5 mm <sup>2</sup> , temperature resistance up to 60 °C
Assignment of terminals, 2-wire (variant 1 and 2) <sup>1)</sup>		 <p>1) For 3-wire connection see operating instructions</p>

### Mechanical data

Mechanical design		Safety pressure gauge S3 with solid baffle wall and blow-out back following EN 837
Display		Nominal size 100 or 160
Scale ranges		0 ... 16 mbar to 0 ... 250 mbar (overpressure safety up to 40, 100 bar: Flange $\varnothing$ 160 mm overpressure safety up to 400 bar: Flange $\varnothing$ 190 mm) 0 ... 400 mbar to 0 ... 40 bar (overpressure safety up to 40, 100 bar: Flange $\varnothing$ 100 mm overpressure safety up to 400 bar: Flange $\varnothing$ 120 mm)
Process connection		G 1/2 B (male) (others as options)
Damping options		
<ul style="list-style-type: none"> <li>■ For dynam. pressure load</li> <li>■ For vibration</li> </ul>		Restrictor in the pressure channel Liquid filling of the case
Operating limits		Overload resistance to EN 837-3
Pressure limitation		
<ul style="list-style-type: none"> <li>■ Steady</li> <li>■ Fluctuating</li> </ul>		Full scale value 0.9 x full scale value
		Observe the recommendations for the use of mechanical pressure measuring systems per EN 837-2
Accuracy (mechanical display)		$\leq 1.6 \%$ of measuring span (class 1.6 per EN 837-3)
Permissible temperature range		
<ul style="list-style-type: none"> <li>■ Medium</li> <li>■ Ambient</li> </ul>	°C	-20... +100 -20 ... +60 (with window in polycarbonate max. 80 °C)
Temperature effect	%/10 K	max. $\pm 0.8$ of full scale value (when the temperature deviates from 20 °C reference temperature)
Case ingress protection		IP 54 per EN 60529 / IEC 529 (with liquid filling IP 65)

## Dimensions in mm

### Standard version



NS	Scale range in bar	Overpressure safety up to in bar	Dimensions in mm										Weight in kg
			a	b	c	d	D <sub>1</sub>	D <sub>2</sub>	e	G	h ±2	SW	
100	≤ 0.25	40	25	59.5	94	160	101	99	17	G ½ B	119	22	3.4
		100				155					4.7		
		400				190					15.7		
	> 0.25	40	25	59.5	94	100	101	99	17	G ½ B	135	22	1.7
		100				155					1.8		
		400				120					4.0		
160	≤ 0.25	40	25	65	124	160	161	159	17	G ½ B	165	22	4.0
		100				184					5.3		
		400				190					16.3		
	> 0.25	40	25	65	124	100	161	159	17	G ½ B	165	22	2.2
		100				184					2.3		
		400				120					4.6		

## CE conformity

### Pressure equipment directive

97/23/EC, PS > 200 bar, module A, pressure accessory

### EMC directive

2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

### ATEX directive <sup>1)</sup>

94/9/EC, II 2 G Ex ia IIC

## Approvals

- **GOST-R**, import certificate, Russia
- **NEPSI**, ignition protection type „i“ - intrinsic safety, China <sup>1)</sup>
- **CRN**, safety (e.g. electr. safety, overpressure, ...), Canada

## Certificates <sup>1)</sup>

- 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 wetted parts metal component, indication accuracy)

<sup>1)</sup> Option

Approvals and certificates, see website

## Ordering information

Model / Nominal size / Output signal / Scale range / Overpressure safety up to ... bar / Connection size / Connection location / Options

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