

# Diaphragm pressure gauge with electrical output signal

## For the process industry

### High overload safety up to the 10-fold full scale value, max. 40 bar

### Models PGT43.100 and PGT43.160

WIKA data sheet PV 14.03



for further approvals  
see page 4

**intelliGAUGE®**

#### Applications

- Acquisition and display of process values
- Output signals 4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V for the transmission of process values to the control room
- For measuring points with increased overload
- Easy-to-read, analogue on-site display needing no external power
- Safety-related applications

#### Special features

- No configuration necessary due to "plug-and-play"
- Signal transmission per NAMUR
- Measuring ranges from 0 ... 16 mbar
- Easy-to-read analogue display with nominal size 100 or 160
- Safety pressure gauge S3 per EN 837-3



**Diaphragm pressure gauge model PGT43.100**

#### Description

Wherever the process pressure has to be indicated locally and, at the same time, a signal transmission to the central control or remote centre is desired, the model PGT43 intelliGAUGE (US patent no. 8,030,990) can be used.

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 voltage supply is lost.

The intelliGAUGE model PGT43 fulfils all safety-related requirements of the relevant standards and regulations for the on-site display of the working pressure of pressure vessels. An additional measuring point for mechanical pressure display can thus be saved.

The model PGT43 is based upon a model 43x.30 high-quality, stainless steel safety pressure gauge with a nominal size of 100 or 160. The pressure measuring instrument is manufactured in accordance with EN 837-3.

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

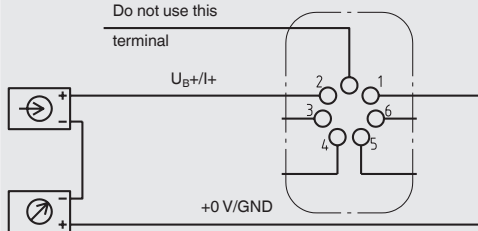
The measuring span (electrical output signal) is adjusted automatically along with the mechanical display, i.e. the scale over the full display range corresponds to 4 ... 20 mA. The electrical zero point can also be set manually.

# Specifications

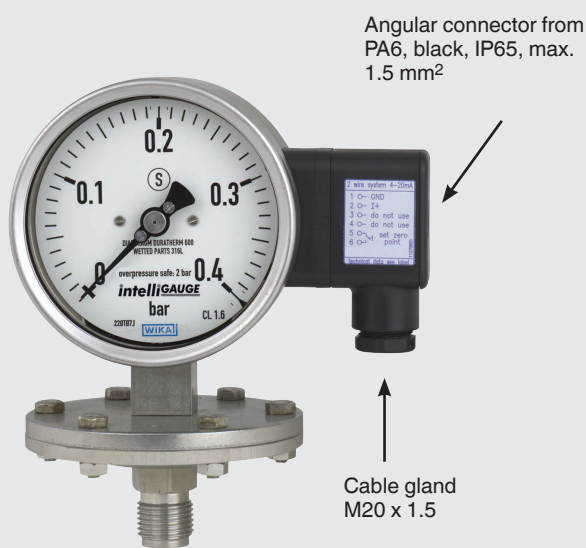
Mechanical data	
<b>Mechanical version</b>	Safety pressure gauge S3 with solid baffle wall and blow-out back following EN 837-3
<b>Nominal size in mm</b>	100, 160
<b>Accuracy (mechanical display)</b>	≤ 1.6 % of measuring span (class 1.6 per EN 837-3)
<b>Scale ranges</b>	0 ... 16 mbar to 0 ... 250 mbar (flange Ø 160 mm) 0 ... 400 mbar to 0 ... 25 bar (flange Ø 100 mm) or all other equivalent vacuum or combined pressure and vacuum ranges
<b>Process connection</b>	Stainless steel 316L, G ½ B (male) (others as options)
<b>Operating limits</b>	Overload resistance per EN 837-3
<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>Overload safety</b>	Up to the 5-fold full scale value, max. 40 bar
<b>Pressure element</b>	≤ 0.25 bar: Stainless steel 316L > 0.25 bar: NiCr-alloy (Inconel)
<b>Sealing towards the pressure chamber</b>	FPM/FKM
<b>Movement</b>	Brass
<b>Dial</b>	Aluminium, white, black lettering
<b>Pointer</b>	■ Adjustable pointer, aluminium, black ■ Standard pointer, aluminium, black (for models with liquid filling)
<b>Case with upper measuring flange</b>	Stainless steel, safety version with solid baffle wall (Solidfront) and blow-out back, scale ranges ≤ 0 ... 16 bar with compensating valve to vent case
<b>Window</b>	Laminated safety glass
<b>Ring</b>	Bayonet ring, stainless steel
<b>Damping options</b>	
For dynam. pressure load	Restrictor in the pressure port
For vibration	Liquid filling of the case
<b>Permissible temperature range</b>	
Medium	-20... +100 °C
Ambient	-20 ... +60 °C (with window from polycarbonate max. 80 °C)
<b>Temperature effect</b>	max. ±0.8 %/10 K of full scale value (when the temperature deviates from 20 °C reference temperature)
<b>Case ingress protection</b>	IP54 per IEC/EN 60529 (with liquid filling IP65)

## Options









- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Overload safety: Up to the 10-fold full scale value, max. 40 bar
- Vacuum safe 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 lined/coated with special materials such as PTFE, Hastelloy, Monel, nickel, tantalum, titanium, silver (accuracy class 2.5)
- Filling liquid silicone M50
- Window from polycarbonate (max. ambient temperature 80 °C)
- Switch contacts (see data sheet AC 08.01)

Electrical data	
<b>Power supply <math>U_B</math></b>	DC $12\text{ V} < U_B \leq 30\text{ V}$ (variant 1 + 3) DC $14\text{ V} < U_B \leq 30\text{ V}$ (variant 2) DC $15\text{ V} < U_B \leq 30\text{ V}$ (variant 4)
<b>Influence of power supply</b>	$\leq 0.1\%$ of full scale/10 V
<b>Permissible residual ripple of <math>U_B</math></b>	$\leq 10\%$ ss
<b>Output signal</b>	Variant 1: 4 ... 20 mA, 2-wire, passive, per NAMUR NE 43 Variant 2: 4 ... 20 mA, per ATEX Variant 3: 0 ... 20 mA, 3-wire Variant 4: 0 ... 10 V, 3-wire
<b>Permissible max. load <math>R_A</math></b>	Variant 1, 2, 3: $R_A \leq (U_B - 12\text{ V})/0.02\text{ A}$ with $R_A$ in Ohm und $U_B$ in Volt, however max. 600 $\Omega$ Variant 4: $R_A = 100\text{ k}\Omega$
<b>Effect of load (variant 1 - 3)</b>	$\leq 0.1\%$ of full scale
<b>Impedance at voltage output</b>	0.5 $\Omega$
<b>Electrical zero point</b>	Through a jumper across terminals 5 and 6 (see operating instructions)
Long-term stability of electronics	$< 0.3\%$ of full scale per year
Electr. output signal	$\leq 1\%$ of measuring span
<b>Linear error</b>	$\leq 1\%$ of measuring span (terminal method)
<b>Resolution</b>	0.13 % of full scale (10 bit resolution at 360°)
<b>Refresh rate (measuring rate)</b>	600 ms
<b>Maximum values for the power supply circuit (only for Ex version)</b>	
Power supply $U_i$	DC 30 V
Short-circuit current $I_i$	100 mA
Power $P_i$	1 W
Internal capacitance $C_i$	12 nF
Internal inductance $L_i$	Negligible
<b>Electrical connection</b>	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
<b>Designation of connection terminals, 2-wire (variant 1 and 2)</b>	<div> <p>Do not use this terminal</p>  <p>Terminals 3 and 4: For internal use only Terminals 5 and 6: Reset zero point</p> </div>
Designation of connection terminals for 3-wire (variant 3 and 4), see operating instructions	

### Cable connection



# Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> ■ EMC directive ■ ATEX directive (option)	European Union
	<b>EAC (option)</b> ■ EMC directive ■ Pressure equipment directive ■ Low voltage directive ■ Hazardous areas	Eurasian Economic Community
	<b>GOST (option)</b> Metrology, measurement technology	Russia
	<b>KazInMetr</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

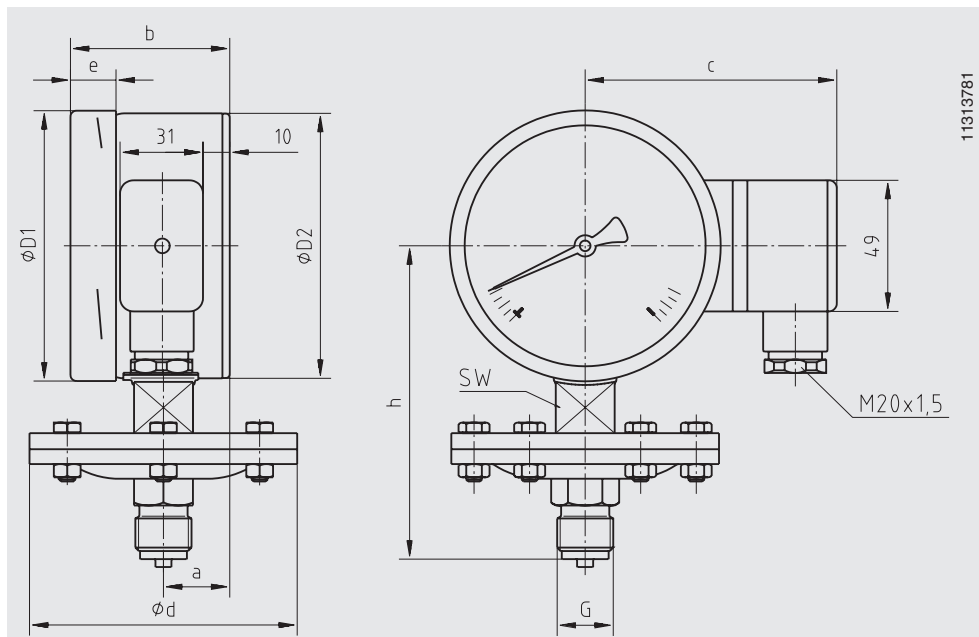
## Certificates (option)

- 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

## Dimensions in mm

### Standard version



NS	Scale range	Dimensions in mm										Weight in kg
	in bar	a	b	c	d	D <sub>1</sub>	D <sub>2</sub>	e	G	h ±1	SW	
100	≤ 0.25	25	59.5	94	160	101	99	17	G ½ B	119	22	2.5
100	> 0.25	25	59.5	94	100	101	99	17	G ½ B	117	22	1.3
160	≤ 0.25	25	65	124	160	161	159	17	G ½ B	149	22	2.9
160	> 0.25	25	65	124	100	161	159	17	G ½ B	149	22	1.7

### Ordering information

Model / Scale range / Connection size / Connection location / Output signal / Options

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