

# 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>	<ul style="list-style-type: none"> <li>■ Adjustable pointer, aluminium, black</li> <li>■ Standard pointer, aluminium, black (for models with liquid filling)</li> </ul>
<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

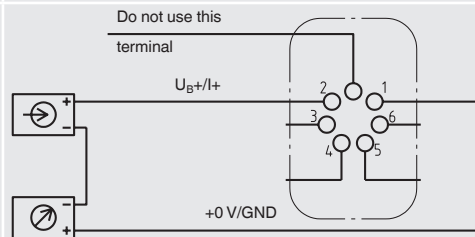
- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Overload safety: Up to the 10-fold full scale value, max. 40 bar
- Vacuum safe to -1 bar
- Max. medium temperature +200 °C
- Higher indication accuracy, class 1.0
- Output signal 0 ... 20 mA, 0 ... 10 V
- Open connecting 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

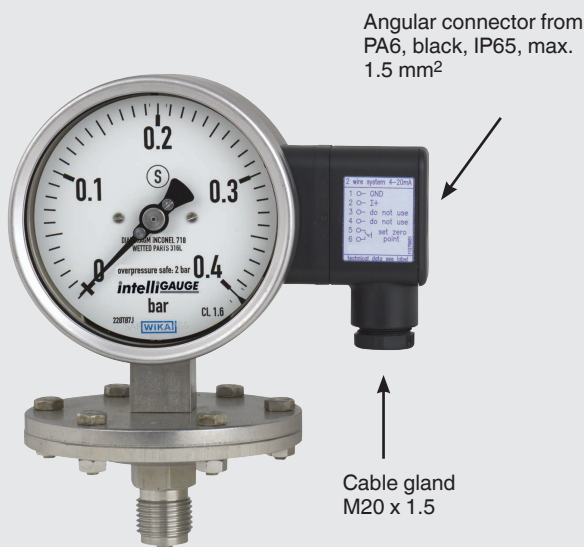
### Designation of connection terminals, 2-wire (variant 1 and 2)

Designation of connection terminals for 3-wire (variant 3 and 4), see operating instructions











Terminals 3 and 4: For internal use only  
Terminals 5 and 6: Reset zero point

## Cable connection



# Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ ATEX directive (option)</li> </ul>	European Union
	<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</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> <ul style="list-style-type: none"> <li>■ Hazardous areas</li> </ul>	Ukraine
	<b>Uzstandard (option)</b> Metrology, measurement technology	Uzbekistan
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

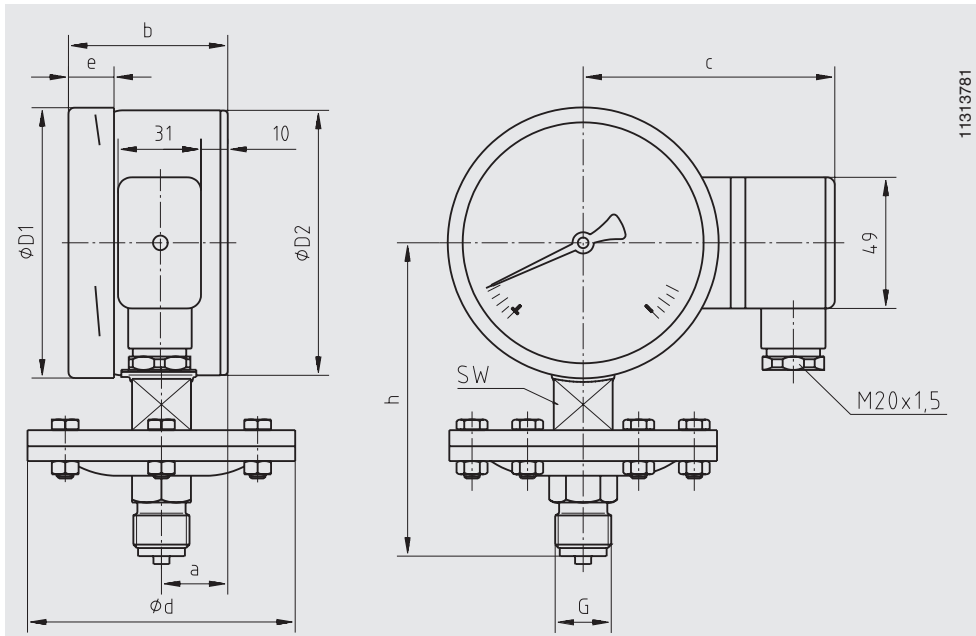
## Certificates (option)

- 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

© 05/2008 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.  
The specifications given in this document represent the state of engineering at the time of publishing.  
We reserve the right to make modifications to the specifications and materials.

