

# Differential pressure gauge with output signal

## For the process industry, all-metal media chamber

### Models DPGT43.100 and DPGT43.160

WIKA data sheet PV 17.05



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 differential overpressure
- 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
- Differential pressure measuring ranges from 0 ... 16 mbar
- Easy-to-read analogue display with nominal sizes 100 and 160
- Individual, non-linear characteristic curves (e. g.  $x^2$  or  $\sqrt{x}$  for flow measurement)

#### Description

Wherever the differential 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 DPGT43 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.

An additional measuring point for mechanical pressure display can thus be saved.

The model DPGT43 is based upon a model 732.51 high-quality, stainless steel pressure gauge with a nominal size of 100 or 160. The pressure measuring instrument is manufactured in accordance with EN 837-3.

These differential pressure gauges are made of highly corrosion-resistant stainless steel and feature an all-metal sealing of the media chamber.



Differential pressure gauge model DPGT43.100

Therefore no elastomer sealing elements are required, so that a better long-term leak tightness is ensured. A high overload safety is achieved by the all-metal construction and the close-fitting design of the pressure element.

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.

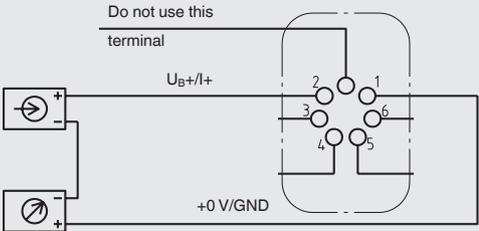
The electronic WIKA sensor, integrated into the high-quality mechanical differential pressure gauge, combines the advantages of electrical signal transmission with the advantages of a local mechanical display. The measuring span (electrical output signal) is adjusted automatically along with the mechanical display, i.e. the scale over the full display range corresponds to 4 ... 20 mA. The electrical zero point can also be set manually.

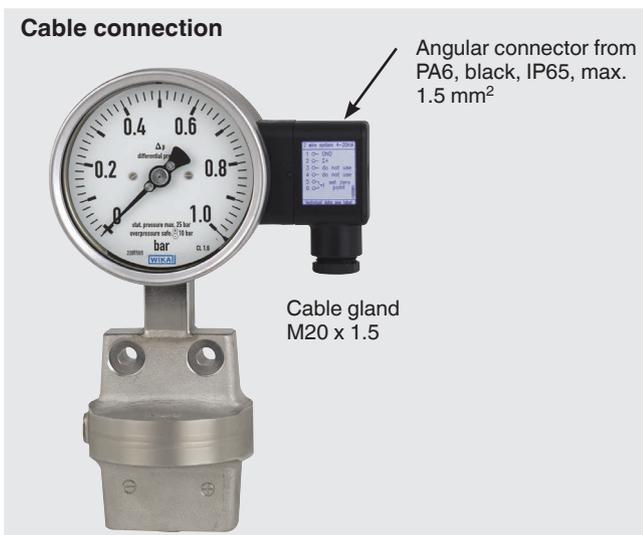
## Specifications

Mechanical data	
<b>Mechanical version</b>	Safety pressure gauge S3 with solid baffle wall and blow-out back following EN 837
<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 0 ... 400 mbar to 0 ... 40 bar or all other equivalent vacuum or combined pressure and vacuum ranges Scale length approx. 180 °
<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>	see table on page 4
<b>Media chamber with process connection (wetted)</b>	Stainless steel 316Ti (1.4571) Lower mount 2 x G ¼ female
<b>Pressure elements (wetted)</b>	≤ 0.25 bar: Stainless steel 316L > 0.25 bar: NiCr alloy (Inconel)
<b>Venting of the media chambers (wetted)</b>	Stainless steel 316Ti (1.4571) for scale ranges ≤ 0.25 bar (option for scale ranges ≥ 0.4 bar)
<b>Sealing bellows (wetted)</b>	Stainless steel 316Ti (1.4571)
<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</b>	Stainless steel, safety version with solid baffle wall (Solidfront) and blow-out back
<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. ±0.5 %/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)
<b>Installation</b>	according to affixed symbols: ⊕ high pressure, ⊖ low pressure
<b>Mounting</b>	<ul style="list-style-type: none"> <li>■ Rigid measuring lines</li> <li>■ Mounting holes in measuring flange</li> <li>■ Panel mounting flange (option)</li> <li>■ Instrument mounting bracket for wall or pipe mounting (option)</li> </ul>

## Options

- Liquid filling (silicone M50)
- Sealings (model 910.17, see data sheet AC 09.08)
- Other process connections via female or male threads
- Higher max. working pressure (static pressure) and higher overload safety (see table page 4)
- Higher indication accuracy, class 1.0
- Output signal 0 ... 20 mA, 0 ... 10 V
- Customer-specific characteristic curve (also non-linear)
- Venting of the media chamber for scale ranges ≥ 0.4 bar
- Lateral connection location (right, left)
- Panel mounting flange
- Instrument mounting bracket for wall or pipe mounting
- Valve manifolds (models IV3x, IV5x, see data sheet AC 09.23)
- Switch contacts (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 and $U_B$ 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>	 <p>Do not use this terminal</p> <p><math>U_B+/I+</math></p> <p><math>+0\text{ V/GND}</math></p> <p>Terminals 3 and 4: For internal use only Terminals 5 and 6: Reset zero point</p>
<b>Designation of connection terminals, 3-wire (variant 3 and 4), see operating instructions</b>	



## Max. working pressure, overload safety

Scale ranges	max. working pressure in bar (static pressure)		Overload safety in bar Either side max.	
	Standard	Option	Standard	Option
0 ... 16 to 0 ... 40 mbar	2.5	6 <sup>1)</sup>	2.5	-
0 ... 60 to 0 ... 250 mbar	6	10	2.5	6
0 ... 400 mbar	25	40	4	40
0 ... 0.6 bar	25	40	6	40
0 ... 1 bar	25	40	10	40
0 ... 1.6 bar	25	40	16	40
0 ... 2.5 to 0 ... 25 bar	25	40	25	40

1) Accuracy class 2.5

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Pressure equipment 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 (option)</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

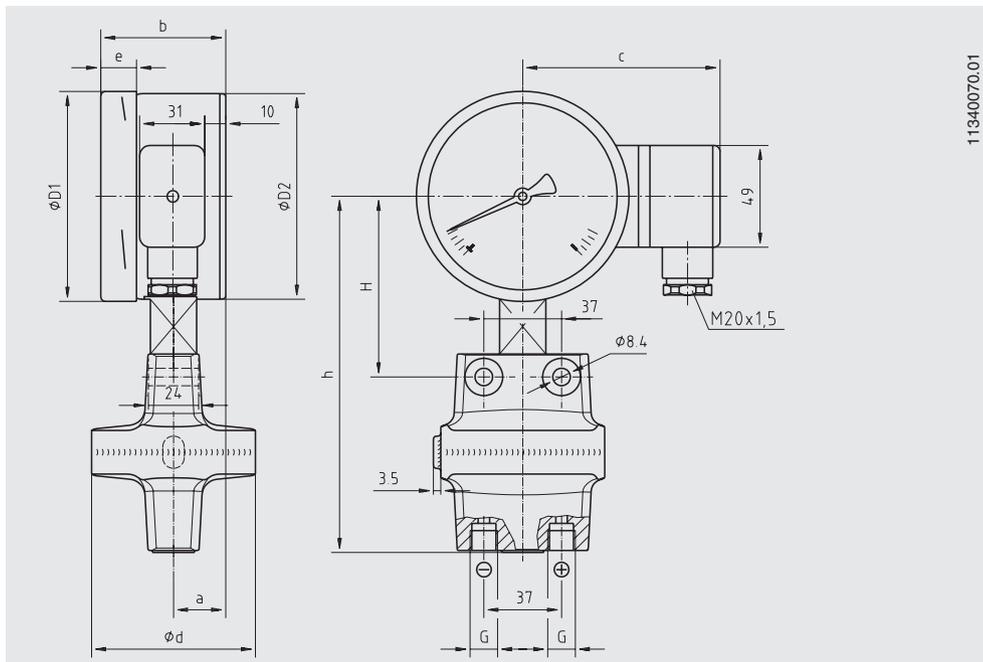
## Certificates (option)

- 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 in bar	Dimensions in mm										Weight in kg
		a	b	c	d	D <sub>1</sub>	D <sub>2</sub>	e	G	h ±1	H	
100	≤ 0.25	25	59.5	94	140	101	99	17	G ¼	161	90	2.7
100	> 0.25	25	59.5	94	78	101	99	17	G ¼	171	87	1.9
160	≤ 0.25	25	65	124	140	161	159	17	G ¼	191	120	3.4
160	> 0.25	25	65	124	78	161	159	17	G ¼	201	117	2.4

### Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Output signal / Scale layout (linear pressure or square root incrementation) / Max. working pressure (static pressure) / 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.



**WIKAL Alexander Wiegand SE & Co. KG**  
 Alexander-Wiegand-Straße 30  
 63911 Klingenberg/Germany  
 Tel. +49 9372 132-0  
 Fax +49 9372 132-406  
 info@wika.de  
 www.wika.de