

# Differential pressure gauge with electrical output signal Stainless steel, safety version Models DPGT43.100 and DPGT43.160

WIKA data sheet PV 17.05



**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 differential overpressure
- Easy-to-read, analogue on-site display needing no external power
- Safety-related applications

## Special features

- "Plug and play" with no configuration necessary
- 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

At any point where a differential 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 DPGT43 intelliGAUGE (patent applied for, among others European Patent No. EP 061 13003) 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 power supply is lost.

An additional measuring point for mechanical pressure indication 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 gauge 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 media chamber sealing. Therefore no elastomer sealing



Differential pressure gauge model DPGT43.100

elements are required, so that a better long-term leak tightness is ensured. A high overpressure safety is achieved by the all-metal construction and the close-fitting design of the measuring element.

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 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 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 ranges

0 ... 16 mbar to 0 ... 25 bar

Scale range 0 ... 16 mbar: Scale length approx. 180 ° or all other equivalent vacuum or combined pressure and vacuum ranges

### Overpressure safety

see table on page 4

### Measuring chamber with process connection (wetted)

Stainless steel 1.4571,  
lower mount (LM)  
2 x G ¼ female

### Pressure elements (wetted)

≤ 0,25 bar: Stainless steel 1.4571  
> 0.25 bar: NiCrCo-alloy (Duratherm)

### Venting of the media chambers (wetted)

Stainless steel 1.4571 for scale ranges ≤ 0.25 bar  
(option for scale ranges ≥ 0.4 bar!)

### Sealing bellows (wetted)

Stainless steel 1.4571

### Movement

Brass

### Dial

Aluminium, white, black lettering

### Pointer

Adjustable pointer, aluminium, black (with the liquid filling option: Standard pointer, aluminium, black)

### Case

Stainless steel, with solid baffle wall (Solidfront) and blow-out back, ingress protection IP 54

### Window

Laminated safety glass

### Bezel ring

Cam ring (bayonet type), stainless steel

### Ingress protection

IP 54 per EN 60529/IEC 529 (with liquid filling IP 65)

### Mounting

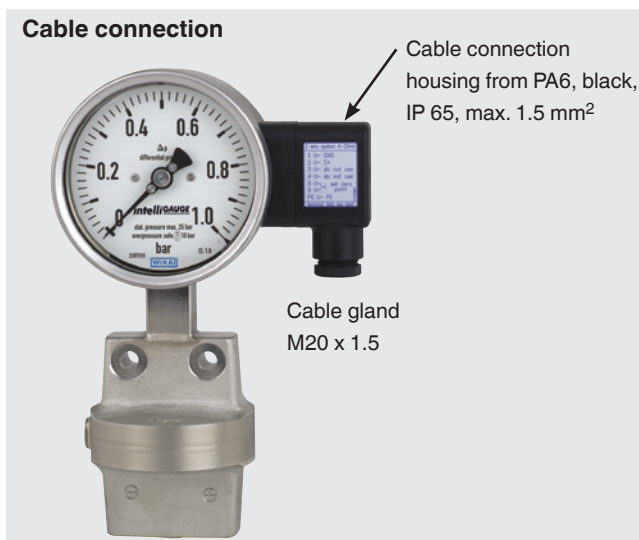
according to affixed symbols  
⊕ high pressure, ⊖ low pressure

### Mounting by means of

- Rigid measuring lines
- Mounting holes in measuring flange
- Panel mounting flange (option)
- Mounting bracket for wall or pipe mounting (option)

## Options

- Liquid filling (silicone M50)
- Other process connections via female or male threads
- Higher max. working pressure (static pressure) and higher overpressure 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)
- Combined display of differential pressure and working pressure
- Mounting bracket for wall or pipe mounting
- Panel mounting flange
- Version per ATEX Ex II 2G Ex ia IIC T4 / T5 / T6
- Gost standard approval
- Pressure equalising valve (data sheet AC 09.11)
- Switch contacts (data sheet AC 08.01)



## CE conformity

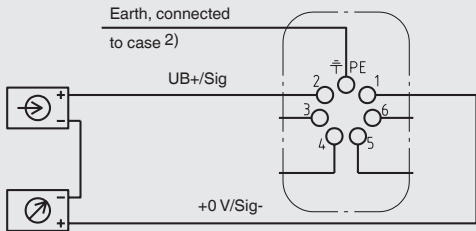
### EMC directive

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

### ATEX directive

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

**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	% ss	$\leq 10$
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 $R_A$ for variant 1 - 3		$R_A \leq (U_B - 12 V)/0.02$ A with $R_A$ in Ohm and $U_B$ in Volt, however max. 600 $\Omega$
Effect of load (variant 1 - 3)	% FS	$\leq 0.1$
Electrical zero point		through a jumper across terminals 5 and 6 (see operating instructions)
■ Long-term stability of electronics	% FS/a	$< 0.3$
■ Electr. output signal		$\leq 1$ % of the measuring span
Linearity	% of span	$\leq 1.0$ % (terminal method)
Safety-related maximum values		Ex version
■ Power supply $U_i$	DC V	max. 30
■ Short circuit current $I_i$	mA	max. 100
■ Power $P_i$	W	max. 1
■ Internal capacitance $C_i$	nF	12
■ Internal inductance $L_i$	mH	negligible
Electrical connection		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
Wiring protection		IP 54 per EN 60529 / IEC 529, filled IP 65
Assignment of terminals, 2-wire (variants 1 and 2) <sup>1)</sup>		 <p>Terminals 3, 4, 5 and 6: Only for internal use</p> <p>2) This connection must not be used for equipotential bonding. The instrument must be incorporated in the equipotential bonding via the process connection.</p>
1) For 3-wire connection see operating instructions		

**Mechanical data**

Mechanical design		Safety pressure gauge S3 with solid baffle wall following EN 837-1
Display		Nominal size 100 or 160
Scale ranges		
■ Flange Ø 160 mm		0 ... 16 mbar to 0 ... 250 mbar
■ Flange Ø 100 mm		0 ... 400 mbar to 0 ... 40 bar
Process connection		2 x G ¼ female (others as options)
Damping options		
■ For dynam. pressure load		Restrictor in the pressure channel
■ For vibration		Liquid filling of the case
Operating limits		Overload resistance to EN 837-3
Pressure limitation		
■ Steady		Full scale value
■ Fluctuating		0.9 x full scale value
		The recommendations for the use of mechanical pressure measuring systems in accordance with EN 837-2 must be observed
Accuracy		
■ Mechanical display		$\leq 1.6$ % of measuring span (class 1.6 per EN 837-3)
Permissible temperature range		
■ Medium	°C	-20 ... +100
■ Ambient	°C	-20 ... +60
Temperature effect	% / 10 K	max. $\pm 0.5$ 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)

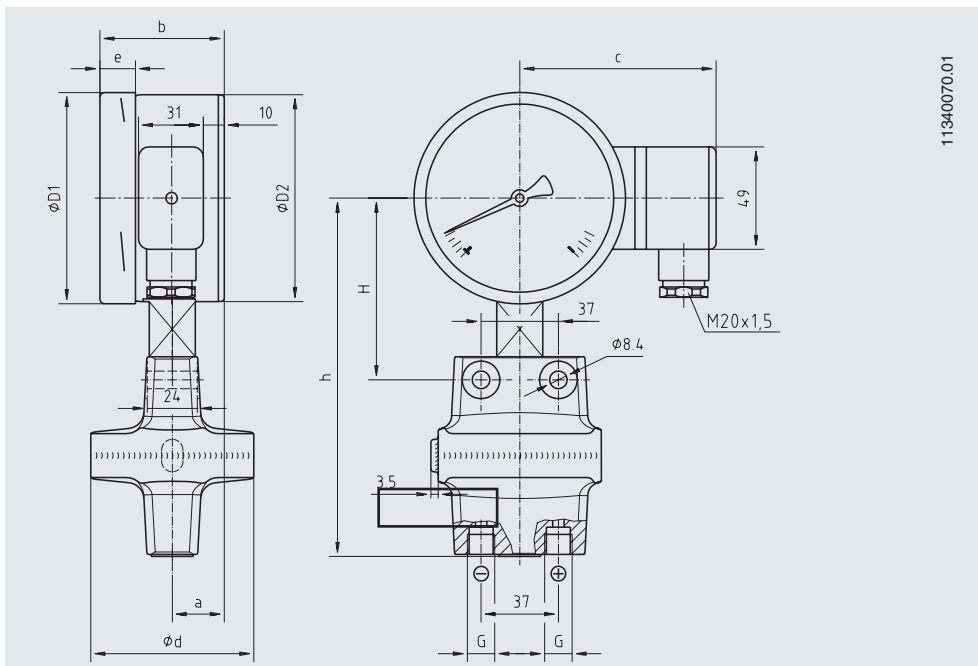
## Max. working pressure / Overpressure safety

Scale ranges	Max. working pressure in bar (static pressure)		Overpressure safety in bar Either side max.	
	Standard	Options	Standard	Options
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

## 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 / Connection size / Connection location / Output signal / Scale layout (linear pressure or square root incrementation) / Max. working pressure (static pressure) / Options

© 2008 WIKA Alexander Wiegand SE & Co. KG, alle Rechte vorbehalten.  
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  
E-mail info@wika.de  
www.wika.de