

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

WIKA data sheet PV 17.05



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 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 (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 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: NiCr-Legierung (Inconel)

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

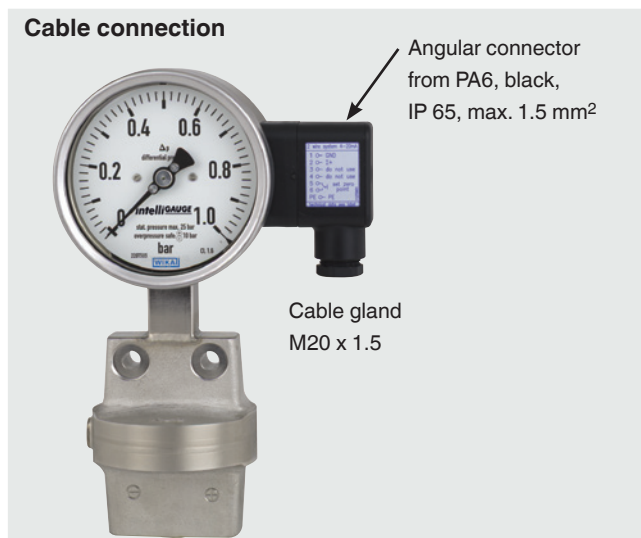
⊕ high pressure, ⊖ low pressure

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

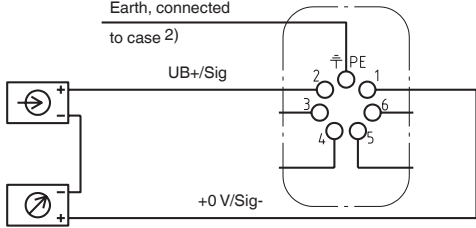
- Liquid filling (silicone M50)
- Sealings (model 910.17, see data sheet AC 09.08)
- Other process connections via female or male threads
- Higher max. working pressure (static pressure) and higher overpressure safety (see table page 4)
- Higher indication accuracy, class 1.0
- Output signal 0 ... 20 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
- Pressure equalising valve (data sheet AC 09.11)
- Switch contacts (data sheet AC 08.01)



Specifications

intelliGAUGE models DPGT43.100, DPGT43.160

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	≤ 0.1
Permissible residual ripple of U_B	%	≤ 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 Ω 100 k Ω
Effect of load (variant 1 - 3)	% FS	≤ 0.1
Impedance at voltage output		0.5 Ω
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		≤ 1 % of the measuring span
Linearity	% of span	≤ 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
■ Power supply U_i	DC V	max. 30
■ Short circuit rating 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		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 ² , temperature resistance up to 60 °C
Assignment of terminals, 2-wire (variant 1 and 2) ¹⁾		 <p>1) For 3-wire connection see operating instructions</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>

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		
■ Flange \varnothing 160 mm		0 ... 16 mbar to 0 ... 250 mbar
■ Flange \varnothing 100 mm		0 ... 400 mbar to 0 ... 40 bar
Process connection		2 x G 1/4 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
		Observe the recommendations for the use of mechanical pressure measuring systems per EN 837-2
Accuracy (mechanical display)		≤ 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. ± 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)

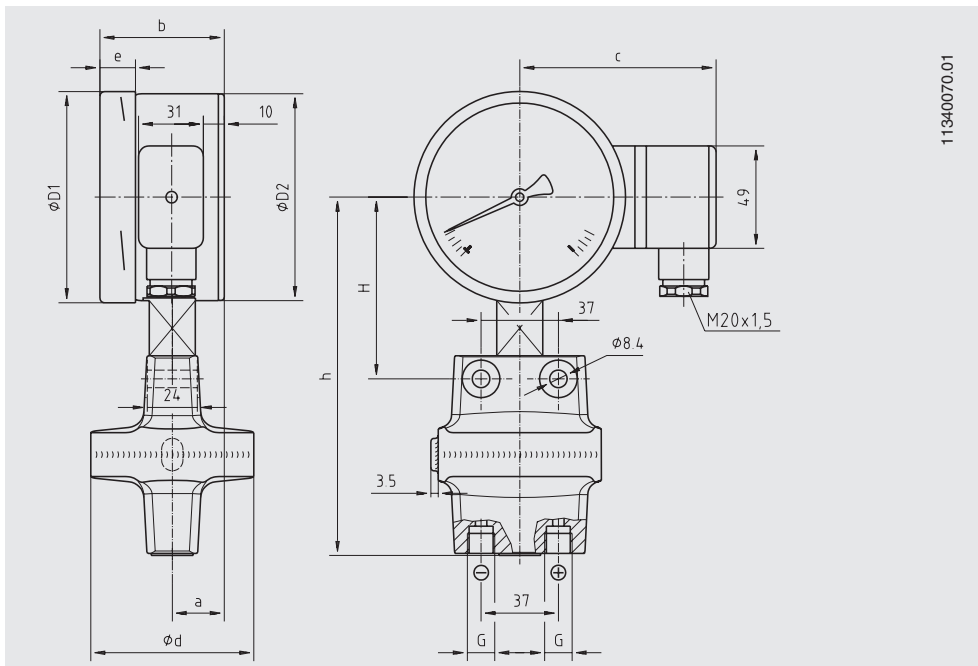
Max. working pressure, overpressure safety

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 ¹⁾	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 ₁	D ₂	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

CE conformity

EMC directive

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

ATEX directive ¹⁾

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

1) Option

Approvals

- **GOST-R**, import certificate, Russia
- **CRN**, safety (e.g. electr. safety, overpressure, ...), Canada

Certificates ¹⁾

- 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)

1) Option

Approvals and certificates, see website

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

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