Differential pressure gauge with output signal
For the process industry, all-metal media chamber
Models DPGT43.100, DPGT43.160

For further approvals, see page 7

intelliGAUGE®

Applications

- Acquisition and indication of processes
- 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 or 0 ... 10 inH_2O
- Individual, non-linear characteristic curves (e.g. x^2 or $\sqrt{x}$ for flow measurement)
- QR code on dial links to instrument-specific information

Differential pressure gauge model DPGT43.100

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 DPGT43 intelliGAUGE® (patent, property right: e.g. DE 202007019025) can be used.

These differential pressure gauges are made of highly corrosion-resistant stainless steel and feature an all-metal sealing of the media chamber.
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 measuring span (electrical output signal) is adjusted automatically along with the mechanical display, i.e. the scale over the full measuring range corresponds to 4 … 20 mA.

The electronic WIKA sensor, integrated into the high-quality mechanical differential pressure gauge, combines the advantages of electrical signal transmission with a local mechanical display that remains readable during a power failure.
This eliminates the need for an additional measuring location with a mechanical pressure indicator.

The QR code on the dial allows instrument-specific information such as the serial number, the order number, certificates and other product data to be retrieved from the internet easily and in the long term.

Data sheets showing similar products:
Differential pressure gauge, high overload safety, model DPGT43HP; see data sheet PV 17.13
Differential pressure gauge with switch contacts, model DPGS43: see data sheet PV 27.05

Specifications

Basic information	
Standard	■ EN 837-3 / DIN 16003 ■ ASME B40.100
	→ For information on the “Selection, installation, handling and operation of pressure gauges”, see technical information IN 00.05.
Further version	■ Oil- and grease-free ■ Oil- and grease-free for oxygen ■ Silicone-free ■ With switch contact; see technical information IN 00.48 ■ With pre-volume deflagration flame arrester [1] for mounting to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02
Nominal size (NS)	■ Ø 100 mm [4"] ■ Ø 160 mm [6"]
Window	■ Laminated safety glass ■ Polycarbonate
Connection location	Lower mount (radial)
	Other connection locations on request
Case	
Design	Safety level “S3” per EN 837-1: With solid baffle wall and blow-out back
Material	■ Stainless steel 1.4301 (304 SS) ■ Stainless steel 1.4571 (316 Ti)
Surface	■ Unpainted ■ Painted with epoxy resin ■ Natural finish case, polished bayonet bezel
Case filling [2]	■ Without ■ Silicone oil M50
	Instruments with case filling can be vented and resealed for internal pressure equalisation.
Venting of the media chambers [3]	
Span ≤ 0.25 bar [100 inH_2O]	With venting
Span ≥ 0.4 bar [160 inH_2O]	■ Without ■ With venting
Movement	Stainless steel

1) Only for instruments with Ex approval
2) Ingress protection IP65 for instruments with case filling
3) The version for customised spans between 0.25 bar [100 inH_2O] and 0.4 bar [160 inH_2O] is determined after application-specific testing.

Measuring element	
Type of measuring element	Diaphragm element
Material [1]	
Span ≤ 0.25 bar [100 inH_2O]	Stainless steel 1.4571 (316 Ti)
Span ≥ 0.4 bar [160 inH_2O]	NiCr alloy (Inconel)

1) The version for customised spans between 0.25 bar [100 inH_2O] and 0.4 bar [160 inH_2O] is determined after application-specific testing.

Accuracy specifications	
Accuracy of the mechanical display	
EN 837-3	■ Class 1.6 ■ Class 1.0 ■ Class 2.5
ASME B40.100	■ ±2 % | ±1 % | ±2 % of measuring span (grade A) ■ ±1 % of measuring span (grade 1A) ■ ±3 % | ±2 % | ±3 % of measuring span (grade B)

Accuracy specifications	
Zero point setting	
Instruments with case filling	Without
Instruments without case filling	■ Without ■ Setting by means of adjustable pointer
Influence of static pressure [1]	
Span ≤ 0.25 bar [100 inH_2O]	±0.3 %/1 bar [14.5 psi]
Span ≥ 0.4 bar [160 inH_2O]	±0.04 %/1 bar [14.5 psi]
Accuracy of output signal	
Accuracy	±1 % of measuring span
Linearity error	≤ 1 % of measuring span (terminal method) [2]
Influence of auxiliary power	< 0.1 % of FS/10 V
Influence of load	≤ 0.1 % of FS
Long-term stability	< 0.3 % of FS/a
Resolution	0.13 % of full scale (10 bit resolution at 360°)
Measuring rate	100 per minute
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.5 % per 10 °C [≤ ±0.5 % per 18 °F] of full scale value
Reference conditions	
Ambient temperature	+20 °C [+68 °F]

1) The version for customised spans between 0.25 bar [100 inH_2O] and 0.4 bar [160 inH_2O] is determined after application-specific testing.
2) For technical reasons, up to the first scale mark, the measured value can lie outside of the class accuracy.

Scale ranges

mbar		
0 ... 16 [1]	0 ... 160	0 ... 1,000
0 ... 25	0 ... 250	0 ... 1,100
0 ... 40	0 ... 300	0 ... 1,200
0 ... 60	0 ... 400	0 ... 1,600
0 ... 100	0 ... 600	0 ... 2,500

bar		
0 ... 0.25	0 ... 4	0 ... 20
0 ... 0.4	0 ... 6	0 ... 25
0 ... 0.6	0 ... 7	0 ... 30
0 ... 1	0 ... 10	0 ... 40
0 ... 1.6	0 ... 14	-
0 ... 2.5	0 ... 16	-

kPa		
0 ... 1.6 [1]	0 ... 40	0 ... 700
0 ... 2.5	0 ... 60	0 ... 800
0 ... 4	0 ... 100	0 ... 1,000
0 ... 6	0 ... 160	0 ... 1,400
0 ... 10	0 ... 250	0 ... 1,600
0 ... 16	0 ... 300	0 ... 2,500
0 ... 25	0 ... 400	-
0 ... 30	0 ... 600	-

inH_2O		
0 ... 10 [1]	0 ... 30	0 ... 150
0 ... 15	0 ... 40	0 ... 200
0 ... 20	0 ... 60	0 ... 250
0 ... 25	0 ... 100	-

psi		
0 ... 6	0 ... 60	0 ... 250
0 ... 8	0 ... 100	0 ... 300
0 ... 10	0 ... 150	0 ... 400
0 ... 15	0 ... 160	0 ... 600
0 ... 30	0 ... 200	-

Vacuum and compound scale ranges

mbar		
-16 ... 0 [1]	-600 ... 0	-50 ... +50
-25 ... 0	-1,000 ... 0	-80 ... +80
-40 ... 0	-1,100 ... 0	-125 ... +125
-60 ... 0	-1,200 ... 0	-200 ... +200
-100 ... 0	-8 ... +8	-300 ... +300
-160 ... 0	-10 ... +15	-500 ... +500
-250 ... 0	-20 ... +20	-600 ... +400
-400 ... 0	-30 ... +30	-1,000 ... +600

psi	
-15 ... 0 inHg	-30 inHg ... +300
-30 ... 0 inHg	-5 ... +5
-30 inHg ... +15	-15 ... +15
-30 inHg ... +30	-30 ... +30
-30 inHg ... +60	-50 ... +50
-30 inHg ... +100	-100 ... +100
-30 inHg ... +160	-150 ... +150
-30 inHg ... +200	-

bar		
-0.6 ... 0	-1 ... +1.5	-1 ... +9
-1 ... 0	-1 ... +3	-1 ... +15
-1 ... +0.6	-1 ... +5	-1 ... +24

kPa		
-60 ... 0	-15 ... +15	-100 ... +500
-100 ... 0	-20 ... +40	-100 ... +700
-2 ... +4	-100 ... +60	-100 ... +900
-4 ... +6	-100 ... +100	-100 ... +1,000
-6 ... +4	-100 ... +150	-100 ... +1,500
-6 ... +10	-100 ... +200	-100 ... +2,400
-10 ... +6	-100 ... +300	-
-10 ... +15	-100 ... +400	-

1) Scale angle approx. 180°, with all other scale ranges the scale angle, as a general rule, is 270°.

→ Other scale ranges on request

Further details on: scale ranges		
Unit	■ mbar ■ bar ■ psi ■ kPa ■ MPa ■ mmH_2O ■ inH_2O ■ kg/cm^2	
	→ Other units on request	
Overload safety and max. operating pressure (static pressure)	The possibility of selection depends on the scale range. → See separate table	
Dial		
Scale layout	■ Single scale ■ Dual scale	
Scale colour	Single scale	Black
	Dual scale	Black/red
Material	Aluminium	
Customer-specific version	■ Without ■ With special scale, e.g. linear pressure or square root incrementation	
	Other scales, e.g. with red mark, circular arcs or circular sectors, on request → Alternatively, adhesive label set for red and green circular arcs; see data sheet AC 08.03	
Pointer		
Instrument pointer	With case filling	Standard pointer, aluminium, black
	Without case filling	Adjustable pointer, aluminium, black
Mark pointer/drag pointer	■ Without ■ Mark pointer on bayonet ring, adjustable	
Pointer stop pin	■ Without ■ At 6 o'clock	

Overload safety and max. operating pressure (static pressure)	
Span [1]	**Overload safety / max. operating pressure (static) Either side max.**
16 ... 40 mbar [10 ... 16 inH_2O]	■ 2.5 bar [36 psi] / 2.5 bar [36 psi] ■ 2.5 bar [36 psi] / 6 bar [87 psi] [2]
60 ... 250 mbar [25 ... 100 inH_2O]	■ 2.5 bar [36 psi] / 6 bar [87 psi] ■ 6 bar [87 psi] / 10 bar [145 psi] [2]
400 mbar [6 psi]	■ 4 bar [58 psi] / 25 bar [363 psi] ■ 40 bar [600 psi] / 40 bar [600 psi] [2]
0.6 bar [10 psi]	■ 6 bar [87 psi] / 25 bar [363 psi] ■ 40 bar [600 psi] / 40 bar [600 psi] [2]
1 bar [15 psi]	■ 10 bar [145 psi] / 25 bar [363 psi] ■ 40 bar [600 psi] / 40 bar [600 psi] [2]
1.6 bar [30 psi]	■ 16 bar [232 psi] / 25 bar [363 psi] ■ 40 bar [600 psi] / 40 bar [600 psi] [2]
2.5 ... 40 bar [60 ... 600 psi]	■ 25 bar [363 psi] / 25 bar [363 psi] ■ 40 bar [600 psi] / 40 bar [600 psi] [2]

1) Values for customised spans are determined after application-specific testing.
2) A version with higher values for overload safety / max. operating pressure (static) can be selected.

Process connection		
Standard	■ EN 837-3 ■ ANSI/B1.20.1	
	→ For valve manifolds for an instrument hook-up, see “Accessories and spare parts”.	
Size		
EN 837-3	■ 2 x G ¼, female thread ■ 2 x G ½ B, male thread	
ANSI/B1.20.1	■ 2 x ¼ NPT, female thread ■ 2 x ½ NPT, male thread	
Restrictor	■ Without ■ Ø 0.6 mm [0.024"], stainless steel ■ Ø 0.3 mm [0.012"], stainless steel	
Material (wetted)		
Media chambers with process connection	Stainless steel 1.4571 (316 Ti)	
Venting of the media chambers	Stainless steel 1.4571 (316 Ti)	
Diaphragm element [1]	Span ≤ 0.25 bar [100 inH_2O]	Stainless steel 1.4571 (316 Ti)
	Span ≥ 0.4 bar [160 inH_2O]	NiCr alloy (Inconel)
Bellows	Stainless steel 1.4571 (316 Ti)	

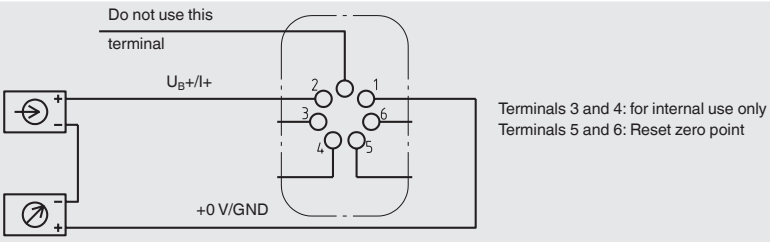
1) The version for customised spans between 0.25 bar [100 inH_2O] and 0.4 bar [160 inH_2O] is determined after application-specific testing.

→ Other process connections on request

Output signal

Signal type	■ Variant 1: 4 … 20 mA, 2-wire, passive, per NAMUR NE 43 ■ Variant 2: 4 ... 20 mA, 2-wire, for hazardous areas ■ Variant 3: 0 ... 20 mA, 3-wire ■ Variant 4: 0 ... 10 V, 3-wire	
Auxiliary power		
Supply voltage	Variant 1, 3	U_B = DC >12 ... ≤ 30 V
	Variant 2	U_B = DC >14 ... ≤ 30 V
	Variant 4	U_B = DC >15 ... ≤ 30 V
Permissible residual ripple of supply voltage	< 10 % ss	
Load	Variant 1, 2, 3	R_A ≤ (Supply voltage – 12 V)/0.02 A, max. 600 Ω
	Variant 4	R_A = 100 kΩ

Electrical connection

Connection type	Cable socket PA 6, black Per VDE 0110 insulation group C/250 V Cable gland M20 x 1.5 with strain relief 6 screw terminals + PE for 2.5 mm² wire cross-section
Pin assignment	 Terminals 3 and 4: for internal use only Terminals 5 and 6: Reset zero point

Operating conditions

Medium temperature range	■ -20 ... +100 °C [-4 ... +212 °F] ■ -20 ... +120 °C [-4 ... +248 °F] ■ -20 ... +150 °C [-4 ... +284 °F]
Ambient temperature range	■ -20 ... +60 °C [-4 ... +140 °F] ■ -40 ... +60 °C [-40 ... +140 °F] [1]
Storage temperature range	-20 ... +60 °C [-4 ... 140 °F]
Pressure limitation	
Steady	Full scale value
Fluctuating	0.9 x full scale value
Ingress protection per IEC/EN 60529 [2]	■ IP54 ■ IP65 ■ IP66

1) Only selectable in combination with silicone oil case filling
2) Instruments with case filling are not designed with IP54 ingress protection

Approvals

Logo	Description	Region
CE	**EU declaration of conformity**	European Union
	EMC Directive	
	Low Voltage Directive	
	RoHS directive	

Optional approvals

Logo	Description	Region
CE Ex	**EU declaration of conformity** ATEX directive [1)] Hazardous areas Gas II 2G Ex ia IIC T6/T5/T4 Gb Dust II 2D Ex ia IIIB T135°C Db	European Union
IEC IECEx	**IECEx** [1)] Hazardous areas Gas Ex ia IIC T6/T5/T4 Gb Dust Ex ia IIIB T135°C Db	International
EAC Ex	**EAC** EMC Directive Low Voltage Directive Hazardous areas	Eurasian Economic Community
	Ex Ukraine Hazardous areas	Ukraine
Ex NEPSI	**NEPSI** Hazardous areas	China
	PAC Kazakhstan Metrology, measurement technology	Kazakhstan
-	**MChS** Permission for commissioning	Kazakhstan
	PAC Uzbekistan Metrology, measurement technology	Uzbekistan
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada

Certificates

Certificates	
Certificates	■ 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)
Recommended calibration interval	1 year (dependent on conditions of use)

→ For approvals and certificates, see website

Patents, property rights

Patent number	Description
DE 202007019025, US 2010045366, CN 101438333	Pointer measuring instrument with output signal 4 ... 20 mA
US Design D1051747S, CPC CN 01677074, DE Design 402022100171, EU Design 402022100171, IR Design DM/222416, EU 3D trademark 018659564	WIKA blue identity design patent

The WIKA blue identity design is protected in various countries under various rights.

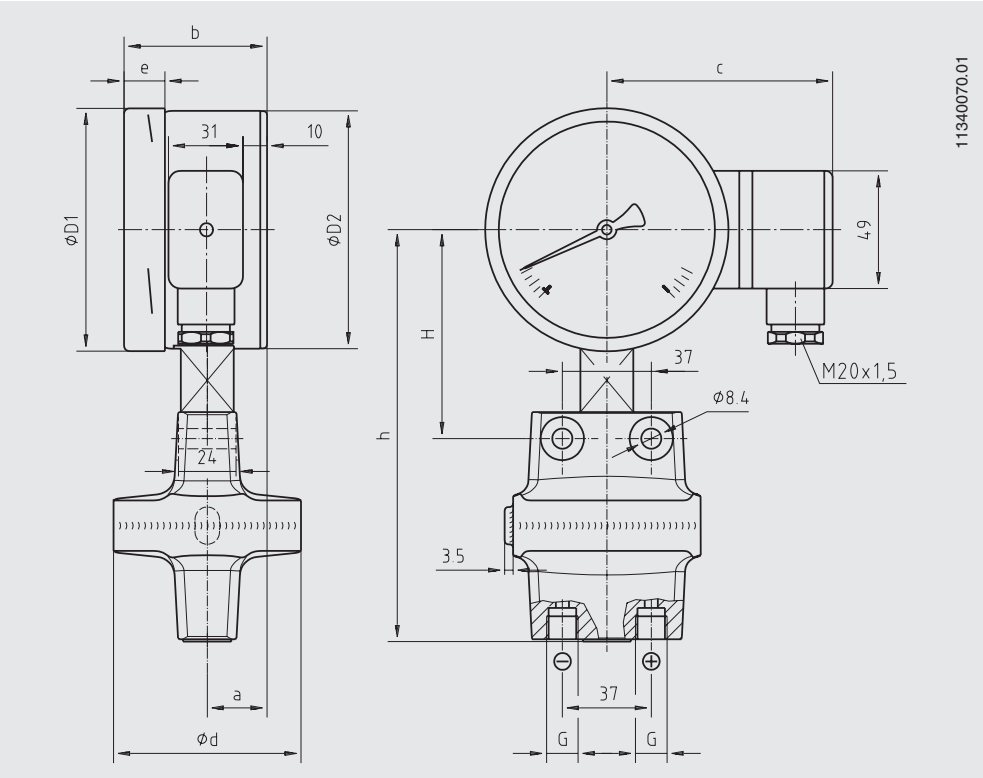
Only variant 2: safety-related characteristic values (Ex)

Safety-related characteristic values (Ex)	
Connection values	
Max. voltage U_i	DC 30 V
Max. current I_i	100 mA
Max. power P_i	720 mW
Effective internal capacitance C_i	11 nF
Effective internal inductance L_i	Negligible

For further information on hazardous areas, see operating instructions.

Dimensions in mm

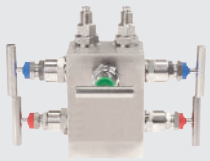
intelliGAUGE® models DPGT43.100 and DPGT43.160



NS	Span [1]	Dimensions in mm										Weight in kg
		a	b	c	d	D_1	D_2	e	G	h ±1	H	
100 [4"]	≤ 0.25 bar [100 inH_2O]	25	59.5	94	140	101	99	17	G ¼	161	90	2.7
100 [4"]	≥ 0.4 bar [160 inH_2O]	25	59.5	94	78	101	99	17	G ¼	171	87	1.9
160 [6"]	≤ 0.25 bar [100 inH_2O]	25	65	124	140	161	159	17	G ¼	191	120	3.4
160 [6"]	≥ 0.4 bar [160 inH_2O]	25	65	124	78	161	159	17	G ¼	201	117	2.4

1) The dimensions of customised scale ranges between 0.25 bar [100 inH_2O] and 0.4 bar [160 inH_2O] are determined after application-specific testing.

Accessories and spare parts

Model		Description	Order number
	**910.33**	Adhesive label set for red and green circular arcs → See data sheet AC 08.03	-
		NS 100 [4"]	14238945
		NS 160 [6"]	14228352
	**910.17**	Sealings → See data sheet AC 09.08	On request
	**910.12**	Snubber for pressure measuring instruments, stainless steel → See data sheet AC 09.03	On request
	**IV304**	3-valve manifold Process connection / instrument connection: 2 x G ½, male thread / 2 x G ¼, male nut	37105018
		3-valve manifold Process connection / instrument connection: 2 x ½ NPT, male thread / 2 x G ¼, male nut	48752900
	**IV504**	5-valve manifold Process connection / instrument connection / Vent connection: 2 x G ½, male thread / 2 x G ¼, male nut / 2 x G ⅛, female thread	2020389
		5-valve manifold Process connection / instrument connection / Vent connection: 2 x ½ NPT, male thread / 2 x G ¼, male nut / 2 x G ⅛, female thread	81640336
		Valve manifolds for differential pressure measuring instruments → See data sheet AC 09.23	On request
	-	Instrument mounting bracket for wall or pipe mounting Steel, silver painted	1282999
		Instrument mounting bracket for wall or pipe mounting Stainless steel	1473700

Ordering information

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

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