

Diaphragm pressure gauge with electrical output signal

Stainless steel, safety version

High overload safety up to 400 bar

Models PGT43HP.100 and PGT43HP.160

WIKA data sheet PV 14.07



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 of 40, 100 or 400 bar
- Easy-to-read, analogue on-site display needing no external power
- Safety-related applications

Special features

- No configuration necessary due to "Plug-and-Play"
- Measuring ranges from 0 ... 16 mbar
- Wide choice of special materials
- For gaseous, liquid and aggressive media, also in aggressive environments, due to all stainless steel construction
- Safety version S3 per EN 837

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 PGT43HP intelliGAUGE (US patent no. 8,030,990) can be used. Due to the metallic construction of the pressure elements, these instruments have a high overload safety in the ranges of 40, 100 and 400 bar.

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 PGT43HP 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 PGT43HP is based upon a model 432.36 high-quality, stainless steel safety pressure gauge with a



Diaphragm pressure gauge model PGT43HP.100

nominal size of 100 or 160. The pressure measuring instrument is manufactured in accordance with EN 837-3.

The robust 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 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

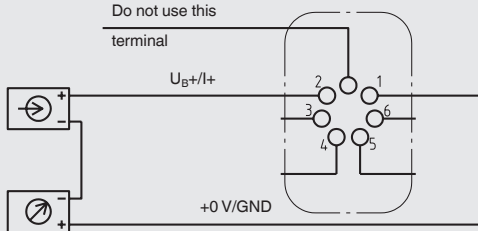
Mechanical data	
Mechanical version	Safety pressure gauge S3 with solid baffle wall and blow-out back following EN 837-3
Nominal size in mm	100, 160
Accuracy (mechanical display)	≤ 1.6 % of measuring span (class 1.6 per EN 837-3)
Scale ranges	0 ... 16 mbar to 0 ... 250 mbar 0 ... 400 mbar to 0 ... 40 bar or all other equivalent vacuum or combined pressure and vacuum ranges
Process connection	Stainless steel 316L, G ½ B (male) (others as options)
Operating limits	Overload resistance per 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 in accordance with EN 837-2
Overload safety ¹⁾	<ul style="list-style-type: none"> ■ 40 bar ■ 100 bar ■ 400 bar (only for scale ranges ≥ 0 ... 400 mbar ²⁾)
Pressure element	≤ 0.25 bar: Stainless steel 316L > 0.25 bar: NiCr-alloy (Inconel)
Sealing towards the pressure chamber	FPM/FKM
Movement	Brass
Dial	Aluminium, white, black lettering
Pointer	<ul style="list-style-type: none"> ■ Adjustable pointer, aluminium, black ■ Standard pointer, aluminium, black (for models with liquid filling)
Case with upper measuring flange	Stainless steel, safety version with solid baffle wall (Solidfront) and blow-out back, scale ranges ≤ 0 ... 16 bar with compensating valve to vent case
Window	Laminated safety glass
Bezel ring	Bayonet ring, stainless steel
Damping options	
For dynam. pressure load	Restrictor in the pressure port
For vibration	Liquid filling of the case
Permissible temperature range	
Medium	-20... +100 °C
Ambient	-20 ... +60 °C (with window from polycarbonate max. 80 °C)
Temperature effect	max. ±0.8 %/10 K of full scale value (when the temperature deviates from 20 °C reference temperature)
Case ingress protection	IP54 per IEC/EN 60529 (with liquid filling IP65)

Options

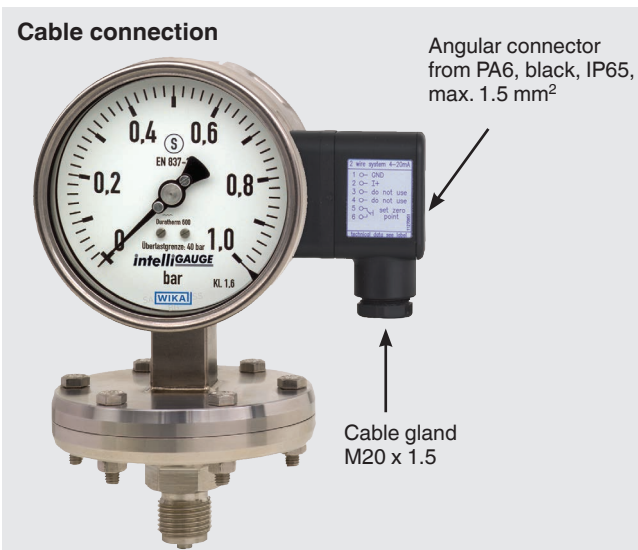
- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Vacuum safe to -1 bar
- Max. medium temperature +200 °C
- Higher indication accuracy, class 1.0
- Output signal 0 ... 20 mA, 0 ... 10 V
- Open connecting flanges per DIN/ASME from DN 15 to DN 80 (preferred nominal widths DN 25 and 50 or DN 1" and 2"; see data sheet IN 00.10)
- Wetted parts made of special materials, high overload safety up to 10 bar (flange Ø 160 mm) or 40 bar (flange Ø 100 mm) ; PTFE, Hastelloy, Monel, nickel, tantalum, titanium
- Additional wall bracket for model 432.36, high overload safety up to 400 bar ³⁾
- Filling liquid silicone M50
- Window from polycarbonate (max. ambient temperature 80 °C)
- Switch contacts (see data sheet AC 08.01)

1) Depending on scale range and overload safety, different flange Ø apply. Dimensions, see page 5.
2) 400 bar overload safety for scale ranges < 400 mbar on request
3) Recommendation with vibration load > 0.5 g









Electrical data

Power supply U_B	DC 12 V < U_B ≤ 30 V (variant 1 + 3) DC 14 V < U_B ≤ 30 V (variant 2) DC 15 V < U_B ≤ 30 V (variant 4)
Influence of power supply	≤ 0.1 % of full scale/10 V
Permissible residual ripple of U_B	≤ 10 % ss
Output signal	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
Permissible max. load R_A	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 Ω Variant 4: $R_A = 100 \text{ k}\Omega$
Effect of load (variant 1 - 3)	≤ 0.1 % of full scale
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	< 0.3 % of full scale per year
Electr. output signal	≤ 1 % of measuring span
Linear error	≤ 1 % of measuring span (terminal method)
Resolution	0.13 % of full scale (10 bit resolution at 360°)
Refresh rate (measuring rate)	600 ms
Maximum values for the power supply circuit (only for Ex version)	
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
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
Designation of connection terminals, 2-wire (variant 1 and 2)	 <p>Do not use this terminal</p> <p>$U_B+/I+$</p> <p>+0 V/GND</p> <p>Terminals 3 and 4: For internal use only Terminals 5 and 6: Reset zero point</p>
Designation of connection terminals for 3-wire (variant 3 and 4), see operating instructions	

Cable connection



Approvals

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none"> ■ EMC directive ■ Pressure equipment directive ■ ATEX directive (option) 	European Union
	EAC (option) <ul style="list-style-type: none"> ■ EMC directive ■ Pressure equipment directive ■ Low voltage directive ■ Hazardous areas 	Eurasian Economic Community
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	UkrSEPRO (option) Metrology, measurement technology	Ukraine
	DNOP (MakNII) (option) <ul style="list-style-type: none"> ■ Hazardous areas 	Ukraine
	Uzstandard (option) Metrology, measurement technology	Uzbekistan
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

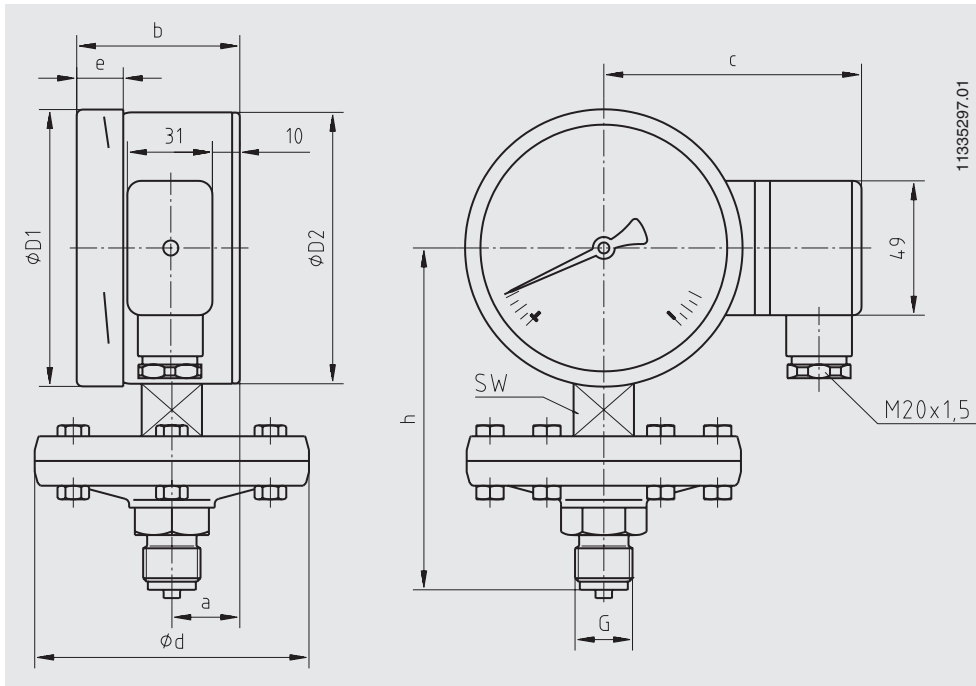
Certificates (option)

- 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	Overload safety	Dimensions in mm										Weight in kg
	in bar	in bar	a	b	c	d	D1	D2	e	G	h ±2	SW	
100	≤ 0.25	40	25	59.5	94	160	101	99	17	G ½ B	135	27	3.4
		100									143	22	6.3
	> 0.25	40	25	59.5	94	100	101	99	17	G ½ B	135	27	1.7
		100									169	22	1.8
160	≤ 0.25	40	25	65	124	160	161	159	17	G ½ B	165	27	4.0
		100									173	22	6.9
	> 0.25	40	25	65	124	100	161	159	17	G ½ B	165	27	2.2
		100											2.3
		400				128					199	22	6.9

Ordering information

Model / Nominal size / Output signal / Scale range / Overload safety up to ... bar / Process connection / Connection location / Options

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