

Absolute pressure gauge with output signal For the process industry Models APGT43.100 and APGT43.160, NS 100 and 160

WIKA data sheet PV 15.02



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
- Pressure measurement independent of fluctuations in the atmospheric pressure
- Monitoring of vacuum pumps and packing machines
- Measurement of condensation pressures and determination of vapour pressure in liquids

Special features

- No configuration necessary due to "plug-and-play"
- Scale ranges from 0 ... 25 mbar absolute pressure
- Easy-to-read analogue display with nominal sizes 100 and 160
- High overload safety, long service life due to metallic media chamber sealing
- Media chamber protected against unauthorised access

Description

The model APGT43 intelliGAUGE (US patent no. 8,030,990) can be used wherever pressure measurement has to be independent of fluctuations in the atmospheric pressure. The instrument serves for the on-site display with a simultaneous signal transmission to a central control or remote centre."

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 APGT43.1x0 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 APGT43 is based upon a model 532.54 high-quality, stainless steel pressure gauge with a nominal size of 100 or 160.



Absolute pressure gauge model APGT43.100

The pressure measuring instrument is manufactured in accordance with DIN 16002.

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 absolute 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 per DIN 16002
Nominal size in mm	100, 160
Accuracy (mechanical display)	≤ 2.5 % of measuring span (class 2.5 per DIN 16002) The measurement accuracy is ensured for ambient pressure fluctuations between 955 and 1,065 mbar (min. and max. of atmospheric pressure).
Scale ranges	0 ... 25 mbar to 0 ... 25 bar absolute pressure
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	Minimum 1 bar absolute pressure (atmospheric pressure), in addition 10 x full scale value, max. 25 bar absolute pressure
Pressure element	≤ 0.25 bar: Stainless steel 316Ti (1.4571) > 0.25 bar: NiCr-alloy (Inconel)
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	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
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

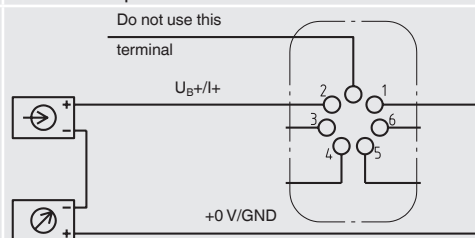
- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Max. medium temperature +200 °C
- Higher indication accuracy
- Output signal 0 ... 20 mA, 0 ... 10 V
- Wetted parts from Monel
- Open connecting flange DN 15/50 PN 16/40 (wetted)
- Small flange for vacuum applications DN 10/32 DIN 28403 (wetted)
- Panel or surface mounting flange (consider measuring cell)
- Instrument mounting bracket for wall or pipe mounting (see data sheet AC 09.07)
- Filling liquid silicone M50
- Window from polycarbonate (max. ambient temperature 80 °C)
- Overload safety: > 10 x full scale value
- ATEX variant: Additionally suitable for mounting to zone 0 (also in conjunction with inductive contact model 831)
- Absolute pressure gauge with switch contacts, see data sheet PV 25.02

Electrical data

Power supply U_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)
Influence of power supply	$\leq 0.1\%$ of full scale/10 V
Permissible residual ripple of U_B	$\leq 10\%$ 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)	$\leq 0.1\%$ 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	$\leq 1\%$ of measuring span
Linear error	$\leq 1\%$ 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

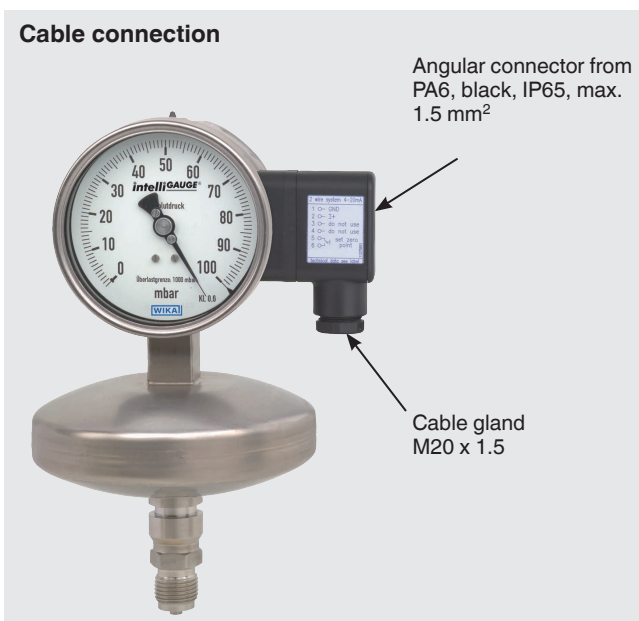
Designation of connection terminals, 2-wire (variant 1 and 2)

Designation of connection terminals for 3-wire (variant 3 and 4), see operating instructions



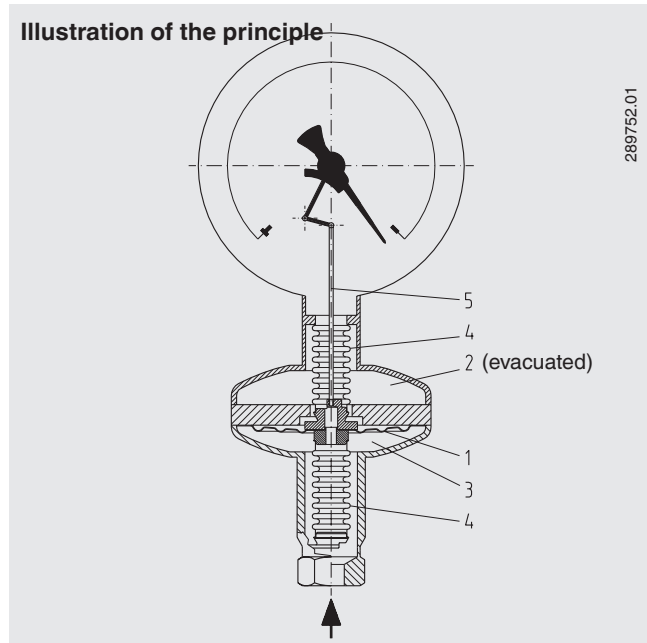
Terminals 3 and 4: For internal use only
Terminals 5 and 6: Reset zero point

Cable connection



Design and operating principle

- The diaphragm (1) separates the media chamber (3) and the reference pressure chamber (2) with absolute pressure zero
- Pressure differential between media chamber (3) and reference pressure chamber (2) will deflect the diaphragm (1)
- In case of an overpressure overload the pressure element will be protected by a contoured metal bolster
- The deflection is transferred from the pressure chambers through bellows or corrugated tubes (4), transmitted to the movement via the link (5) and indicated



Approvals

Logo	Description	Country
 	EU declaration of conformity <ul style="list-style-type: none"> ■ EMC 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
	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

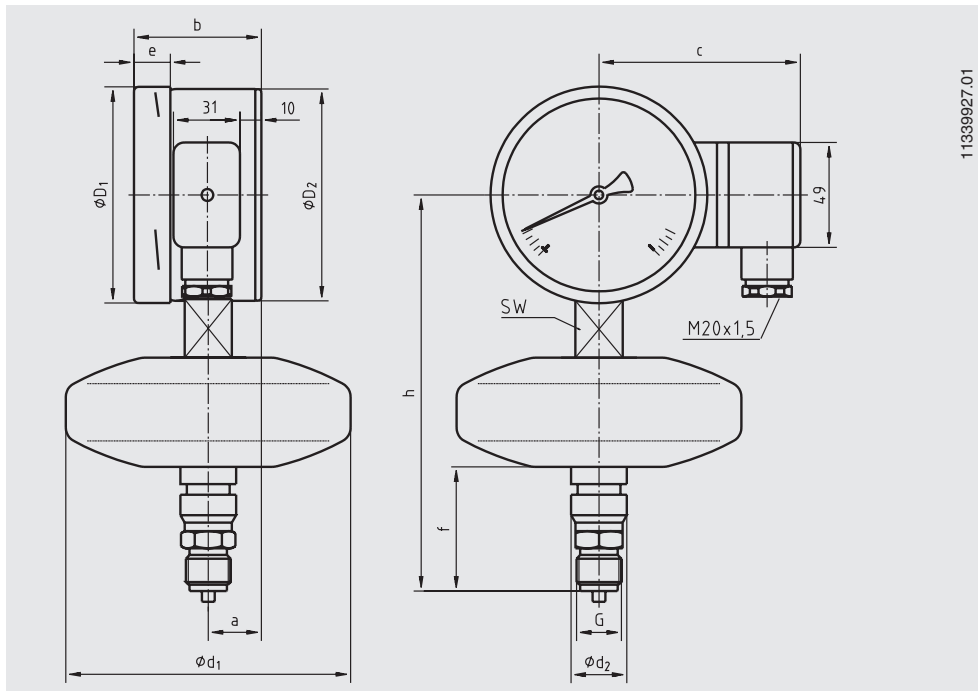
Certificates (option)

- 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	Dimensions in mm											Weight in kg	
	in bar	a	b	c	d ₁	d ₂	D ₁	D ₂	e	f	G	h ±1		SW
100	≤ 0.25	25	59.5	94	133	26	101	99	17	58	G ½ B	185	22	1.8
100	> 0.25	25	59.5	94	76	26	101	99	17	66	G ½ B	177	22	1.2
160	≤ 0.25	25	65	124	133	26	161	159	17	58	G ½ B	215	22	2.3
160	> 0.25	25	65	124	76	26	161	159	17	66	G ½ B	207	22	1.6

Process connection per EN 837-3/7.3

Ordering information

Model / Scale range / Process connection / Connection location / Options

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We reserve the right to make modifications to the specifications and materials.

