

# Absolute pressure gauge with electrical output signal

## Stainless steel, safety version

### Models APGT43.100 and APGT43.160

WIKA data sheet PV 15.02



for further approvals  
see page 5

**intelliGAUGE®**

#### Applications

- Acquisition and display of process values
- Transmission of process value to the control room, 4 ... 20 mA, 0 ... 20 mA, 0 ... 10 V also as individual, non-linear characteristic curves
- Pressure measurement independent of fluctuations in the atmospheric pressure
- Monitoring of vacuum pumps, packing machines, determination of condensation pressure and vapour pressure in liquids

#### Special features

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

#### Description

At any point where pressure has to be measured independent of fluctuations in the atmospheric pressure and 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 APGT43 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.

The intelliGAUGE model APGT43.1x0 fulfils all safety-related requirements of the relevant standards and regulations for the on-site display of the operating pressure of pressure vessels. An additional measuring point for mechanical pressure indication can thus be saved.

The model APGT43 is based upon a model 532.54 high-quality, stainless steel pressure gauge with a nominal size



**Absolute pressure gauge model APGT43.100**

of 100 or 160. The pressure gauge is manufactured in accordance with EN 837-3.

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 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

2.5

The measuring accuracy is ensured for fluctuations in atmospheric pressure between 955 and 1,065 mbar (min. and max. of atmospheric pressure).

### Scale range

0 ... 25 mbar to 0 ... 25 bar absolute pressure

### Overpressure safety

Minimum 1 bar absolute pressure (atmospheric pressure), in addition 10 x full scale value, max. 25 bar absolute pressure

### Process connection (wetted)

Stainless steel 1.4571,  
lower mount (LM)  
G ½ B (male), 22 mm flats

### Pressure element

≤ 0.25 bar: Stainless steel 1.4571  
> 0.25 bar: NiCr-alloy (Inconel)

### Measuring chamber (wetted)

Stainless steel 1.4571

### Movement

Brass

### Dial

Aluminium, white, black lettering

### Pointer

Adjustable pointer, black aluminium

### Case/Bayonet ring

Stainless steel, ingress protection IP 54

### Window

Laminated safety glass

### Bezel ring

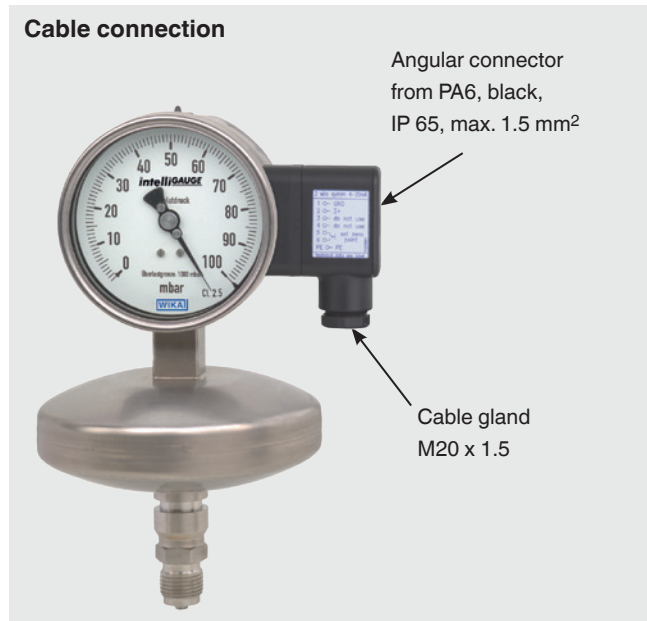
Cam ring (bayonet type), stainless steel

### Zero adjustment

By means of adjustable pointer (adjustment appliance with gauges with liquid filling)

## Options

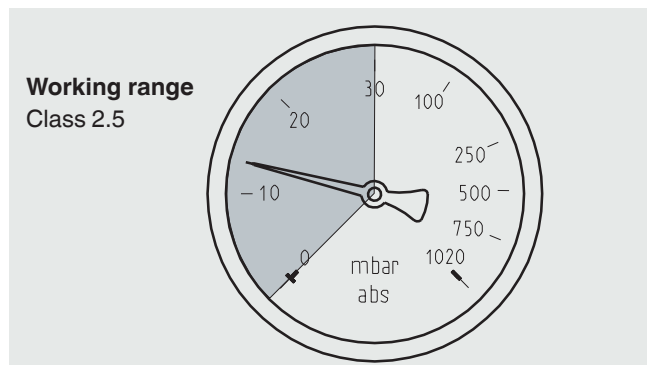
- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Overpressure safety > 10 x full scale value
- Output signal 0 ... 20 mA, 0 ... 10 V
- Higher indication accuracy on request
- Wetted parts made of Monel
- Open connecting flange DN 15/50 PN 16/40 (wetted)
- Small flange for vacuum applications DN 10/32 DIN 28403 (wetted)
- Panel or surface mounting flange (consider measuring cell!)
- Mounting bracket for wall or pipe mounting (see data sheet AC 09.07)
- Filling liquid silicone M50
- ATEX variant: Additionally suitable for mounting to zone 0 (also in conjunction with inductive contact model 831)
- Pressure gauge with switch contacts, see data sheet PV 25.02



## Special versions

### Model APGT43 with expanded lower scale range

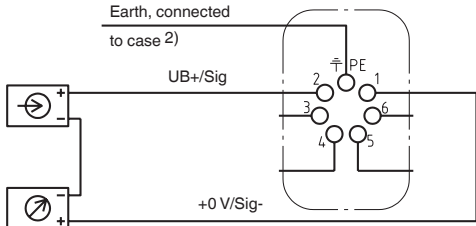
Scale range 0 ... 1,020 mbar absolute pressure, working range 0 ... 30 mbar in class 2.5 expanded to approx. 130  $\text{mbar}$



## Specifications

## intelliGAUGE models APGT43.100, APGT43.160

### Electrical data

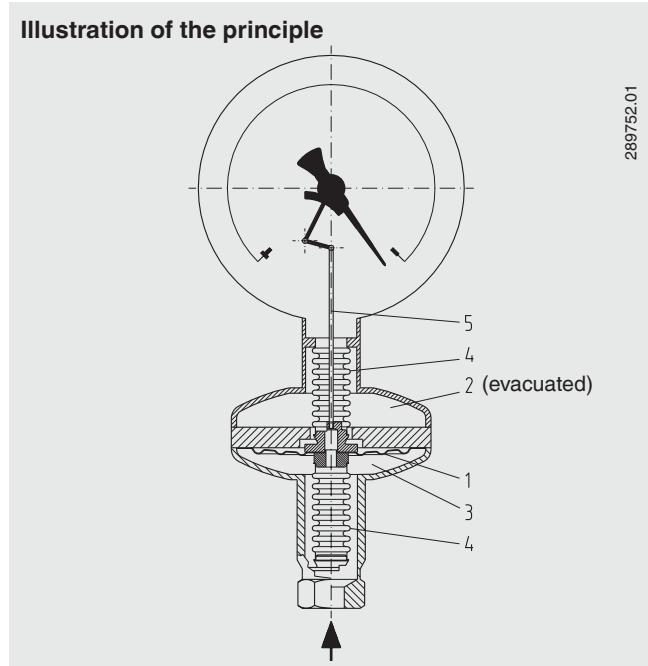
Power supply $U_B$	DC V	$12 < U_B \leq 30$ (min. 14 with Ex version)
Influence of power supply	% FS/10 V	$\leq 0.1$
Permissible residual ripple of $U_B$	%	$\leq 10$
Output signal	Variant 1	4 ... 20 mA, 2-wire, passive, per NAMUR NE 43
	Variant 2	4 ... 20 mA, per ATEX Ex II 2G Ex ia IIC T4 / T5 / T6
	Variant 3	0 ... 20 mA, 3-wire
	Variant 4	0 ... 10 V, 3-wire
Permissible max. load $R_A$	Variant 1 - 3	$R_A \leq (U_B - 12 \text{ V})/0.02 \text{ A}$ with $R_A$ in Ohm and $U_B$ in Volt, however max. 600 $\Omega$
	Variant 4	100 k $\Omega$
Effect of load (variant 1 - 3)	% FS	$\leq 0.1$
Impedance at voltage output		0.5 $\Omega$
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)
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 <sup>2</sup> , 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 following EN 837-1
Display		Nominal size 100 or 160
Scale ranges		0 ... 25 mbar to 0 ... 25 bar
Process connection		G ½ B (male) (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		$\leq 2.5$ % of measuring span (class 2.5 per EN 837-3)
Permissible temperature range		
■ Medium	°C	-20... +100
■ Ambient	°C	-20 ... +60 (with window in polycarbonate max. 80 °C)
Temperature effect	%/10 K	max. $\pm 0.8$ 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)

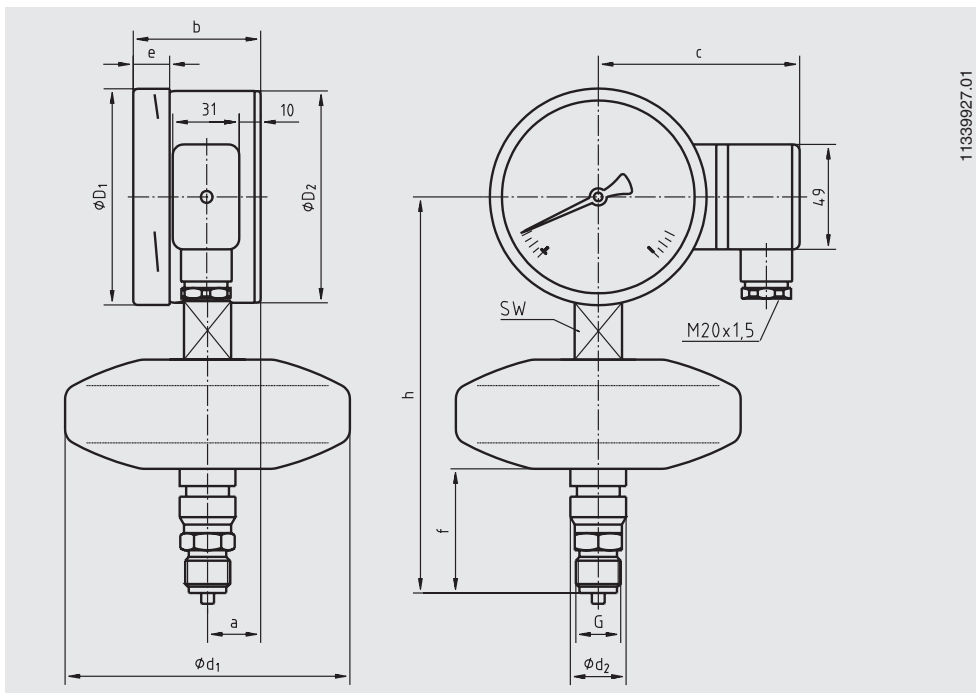
## Design and operating principle

- 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



## Dimensions in mm

### Standard version



NS	Scale range	Dimensions in mm											Weight in kg	
		in bar	a	b	c	d <sub>1</sub>	d <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	e	f	G		h ±1
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

## CE conformity

### EMC directive

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

### ATEX directive <sup>1)</sup>

94/4/EC, II 2 G Ex ia IIC

## Approvals

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

## Certificates <sup>1)</sup>

- 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)

<sup>1)</sup> Option

Approvals and certificates, see website

## Ordering information

Model / Scale range / Connection size / Connection location / Options

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