

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

WIKA data sheet PV 15.02



for further approvals see
page 5

intelliGAUGE®

Applications

- Acquisition and display of processes
- 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 packaging 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 metal media chamber sealing
- Media chamber protected against unauthorised access


intelliGAUGE® model APGT43

Description

The model APGT43 intelliGAUGE® (patent, property right: e.g. DE 202007019025) 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.

The model APGT43 is based upon a model 532.54 high-quality, stainless steel pressure gauge, manufactured in accordance with DIN 16002.

The intelliGAUGE® model APGT43 fulfils all safety-related requirements of the relevant standards and regulations for the on-site display of the working pressure of pressure vessels.

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 display range corresponds to 4 ... 20 mA. The electrical zero point can also be set manually.

The electronic WIKA sensor, integrated into the high-quality absolute pressure gauge, combines the advantages of electrical signal transmission with a local mechanical display that remains readable during a power failure.

An additional measuring point for mechanical pressure display can thus be saved.

Specifications

Model APT43		
Design	Mechanical absolute pressure measuring instrument per DIN 16002	
Nominal size in mm	■ 100 ■ 160	
Accuracy class	2.5 Option: 1.6 ¹⁾ 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 [0 ... 0.36 psi to 0 ... 3,600 psi absolute pressure]	
Scale	Single scale Option: Dual scale	
Pressure limitation		
Steady	Full scale value	
Fluctuating	0.9 x full scale value	
Overload safety	10 x full scale value, max. 25 bar absolute pressure, min. 1 bar absolute pressure Option: 20 x full scale value, max. 25 bar absolute pressure, min. 1 bar absolute pressure	
Process connection with lower measuring flange	■ G ½ B ■ ½ NPT ■ ½ NPT female ■ Open connecting flange DN 25 PN 25 per EN 1092-1, form B ■ Open connecting flange DN 25 PN 25, DIN 2501, form D per DIN 2526 ■ Small flange for vacuum applications DN 10 ■ Small flange for vacuum applications DN 16 Further threaded connections and open connecting flanges on request	
Permissible temperature ²⁾		
Medium	+100 °C [+212 °F] maximum Option: +200 °C [+392 °F] maximum	
Ambient	-20 ... +60 °C [-4 ... 140 °F] Option: -40 ... +60 °C (silicone oil filling) ¹⁾	
Temperature effect	When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. ±0.8 %/10 K of full scale value	
Case	Safety version S3 per EN 837: With solid baffle wall (Solidfront) and blow-out back Instruments with liquid filling with compensating valve to vent case	
Case filling	Without Option: With silicone oil M50 case filling, ingress protection IP65	
Wetted materials		
Diaphragm element (pressure element)	≤ 0.25 bar: Stainless steel 316Ti > 0.25 bar: NiCr alloy (Inconel)	Option: Wetted parts from Monel ¹⁾
Media chamber with process connection	Stainless steel 316L	

1) Application test required

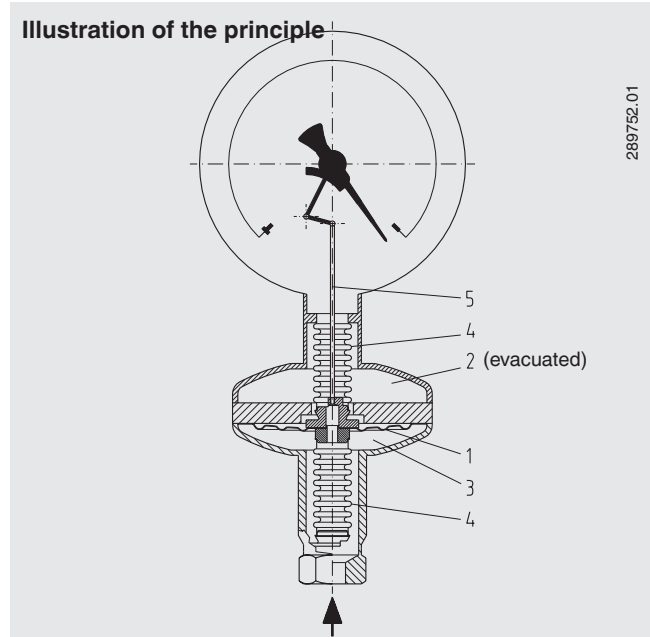
2) For hazardous areas, the permissible temperatures of the output signal variant 2 will apply exclusively (see page 4). These must not be exceeded at the instrument either (for details see operating instructions). If necessary, measures for cooling (e.g. syphon, instrumentation valve, etc.) have to be taken.

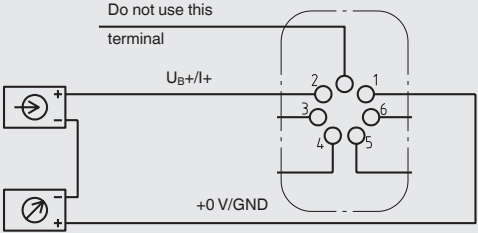
Model APGT43	
Non-wetted materials	
Case, movement, bayonet ring	Stainless steel
Dial	Aluminium, white, black lettering
Instrument pointer	Aluminium, black
Set pointer	Aluminium, red
Window	Laminated safety glass
Ingress protection per IEC/EN 60529	IP54 Option: IP65
Mounting	Rigid measuring lines Option: ■ Panel or surface mounting flange ■ Instrument mounting bracket for wall or pipe mounting

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

Illustration of the principle



Model APT43	
Output signal	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
Supply voltage U_B	DC 12 V < U_B ≤ 30 V (variant 1 and 3) DC 14 V < U_B ≤ 30 V (variant 2) DC 15 V < U_B ≤ 30 V (variant 4)
Influence of supply voltage	≤ 0.1 % of full scale/10 V
Permissible residual ripple of U_B	≤ 10 % ss
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 Ω and U_B in V, however max. 600 Ω Variant 4: $R_A = 100 \text{ k}\Omega$
Effect of load (variant 1, 2, 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
Electrical connection	Cable socket PA 6, black Per VDE 0110 insulation group C/250 V Cable gland M20 x 1.5 Strain relief 6 screw terminals + PE for conductor cross-section 2.5 mm ²
Designation of connection terminals, 2-wire (variant 1 and 2)	 Do not use this terminal $U_B+/I+$ +0 V/GND Terminals 3 and 4: For internal use only Terminals 5 and 6: Reset zero point
Designation of connection terminals for 3-wire (variant 3 and 4), see operating instructions	

Safety-related maximum values (variant 2)

Ui	Ii	Pi	Ci	Li
DC 30 V	100 mA	720 mW	11 nF	negligible

Permissible temperature ranges (variant 2)

T6	T5	T4 ... T1
-20 ... +45 °C	-20 ... +60 °C	-20 ... +70 °C

T85°C	T100°C	T135°C
-20 ... +45 °C	-20 ... +60 °C	-20 ... +70 °C

For further information on hazardous areas, see operating instructions.

Approvals

Logo	Description	Country
 	EU declaration of conformity ■ EMC directive ■ Pressure equipment directive ■ RoHS directive ■ ATEX directive (option) Hazardous areas - Ex ia Gas [II 2G Ex ia IIC T6/T5/T4 Gb] Dust [II 2D Ex ia IIIB T85°C/T100°C/T135°C Db]	European Union
 	IECEX (option) Hazardous areas - Ex ia Gas [Ex ia IIC T6/T5/T4 Gb] Dust [Ex ia IIIB T85°C/T100°C/T135°C Db]	International
	EAC (option) ■ 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) 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)

Patents, property rights

Pointer measuring instrument with output signal 4 ...
 20 mA (patent, property right: e.g. DE 202007019025,
 US 2010045366, CN 101438333)

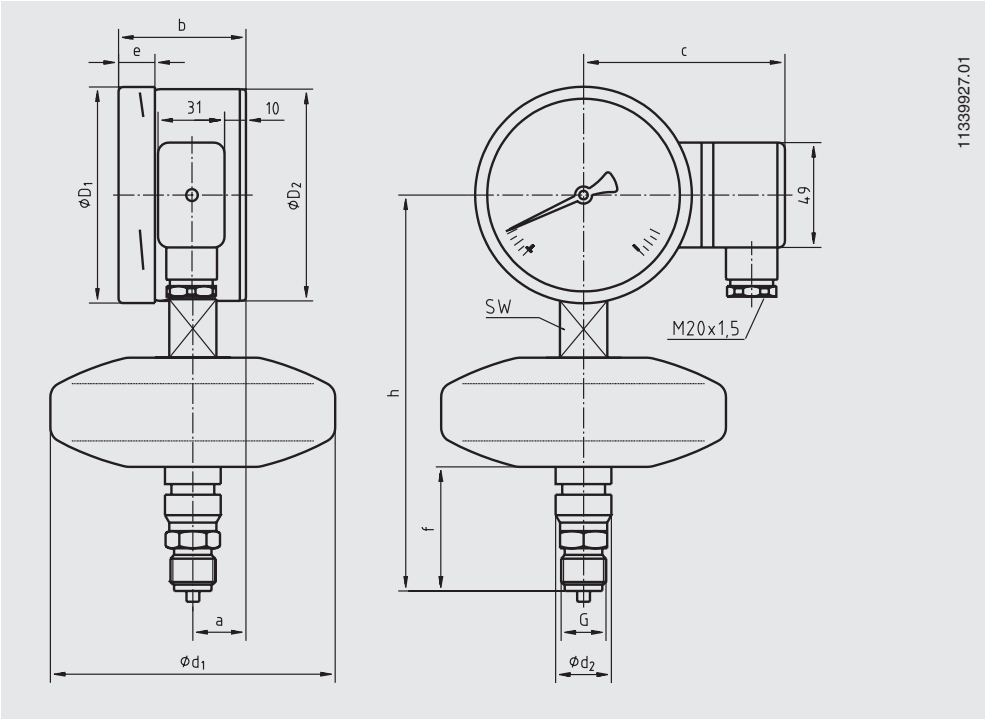
Approvals and certificates, see website

Accessories

- Sealings (model 910.17, see data sheet AC 09.08)
- Valves (models IV20/IV21, see data sheet AC 09.19, and models IV10/IV11, see data sheet AC 09.22)
- Syphons (model 910.15, see data sheet AC 09.06)
- Switch contacts (see data sheet AC 08.01)

Dimensions in mm

intelliGAUGE® model APGT43



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 ... 250 mbar	25	59.5	94	133	26	101	99	17	58	G ½ B	185	22	1.8
100	> 0 ... 250 mbar	25	59.5	94	76	26	101	99	17	66	G ½ B	177	22	1.2
160	≤ 0 ... 250 mbar	25	65	124	133	26	161	159	17	58	G ½ B	215	22	2.3
160	> 0 ... 250 mbar	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 / Nominal size / Scale range / Output signal / Connection location / Process connection / Options

© 09/2008 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.
The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



WIKAL Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de