

Gas density monitor

With calibration valve for calibration

Model GDM-100

WIKA data sheet SP 60.02

Applications

- Medium and high-voltage equipment
- Gas density monitoring of closed SF₆ gas tanks
- Raising an alarm when defined limit values have been reached

Special features

- Local indication with switch contacts
- Temperature-compensated and hermetically sealed, therefore no influence of temperature fluctuations, height differences and atmospheric pressure fluctuations
- Compensation possible for gas mixtures
- Functional check or calibration possible without dismounting, in accordance with EU regulation no. 517/2014 on fluorinated greenhouse gases
- Test connection is welded to prevent leakage

Description

The WIKA gas density measuring instruments provide reliable warnings against dangerously low gas levels, even under extreme ambient conditions. Electrical switch contacts warn the plant operator when the gas density drops below defined levels due to leakage.

Via the on-site indication, the pressure based on 20 °C [68 °F] can be read directly on the instrument.

With regard to switchgear safety, asset protection and environmental protection, it is common to perform functional checks on a regular basis. Article 5 of EU regulation no. 517/2014 on fluorinated greenhouse gases, provides for checking of the leakage detection system at least every 6 years if it contains > 22 kg [48.50 lb] SF₆ gas and the plant was commissioned after 01 January 2017.



Gas density monitor with calibration valve, model GDM-100

With the help of the firmly welded calibration valve, the gas density monitor can be shut off from the process and calibrated without having to disassemble it. This not only reduces maintenance time but also minimises the risks of SF₆ gas emissions and potential leakages during recommissioning.

When connecting a calibration system (e.g. model ACS-10 or model BCS-10) to the calibration valve, the gas density monitor is automatically disconnected from the gas compartment and a calibration can be performed. Following the calibration process, the calibration system can then be disconnected from the calibration valve and the connection to the gas compartment is reestablished automatically.

The calibration valve is also available as a retrofit solution for gas density monitors already installed in the field, as model GLTC-CV, and can be mounted between the gas compartment and gas density monitor.

Specifications

Basic information	
Nominal size	100
Window	<ul style="list-style-type: none"> ■ Laminated safety glass ■ Acrylic glass
Case	<ul style="list-style-type: none"> ■ Stainless steel, with gas filling ■ Stainless steel, with fill fluid Leakage rate: $\leq 1 \cdot 10^{-5}$ mbar · l / s
Calibration pressure P_E	To customer specification
Measuring element	
Material	Stainless steel, welded
Leakage rate	$\leq 1 \cdot 10^{-8}$ mbar · l / s
Test method	Helium mass spectrometry
Movement	<ul style="list-style-type: none"> ■ Stainless steel ■ Bimetal link (temperature compensation)
Ring	Bayonet bezel, stainless steel, secured by means of 3 welding spots

Accuracy specifications	
Accuracy	<ul style="list-style-type: none"> ■ ± 1 % at an ambient temperature of +20 °C [68 °F] ■ ± 2.5 % at an ambient temperature of -20 ... +60 °C [-4 ... +140 °F] and with calibration pressure in accordance with reference isochore (reference diagram KALI-Chemie AG, Hanover, prepared by Dr. Döring 1979)

Scale range	
Scale range	Vacuum and overpressure range with measuring span of 1.6 ... 25 bar [23.20 ... 362.59 psi] (at an ambient temperature of 20 °C [68 °F] and gaseous phase)
Dial	
Scale colour	Red, yellow, green
Material	Aluminium
Pointer	
Instrument pointer	Aluminium, black

Process connection	
Size	G ½ B per EN 837, lower mount
Material (wetted)	Stainless steel, spanner flats 22 mm [0.86 in]

Other connections and connection locations on request.

Operating conditions	
Operating temperature	<ul style="list-style-type: none"> ■ -20 ... +60 °C [-4 ... +140 °F], gaseous phase ■ -40 ... +60 °C [-40 ... +140 °F]
Storage temperature range	-50 ... +60 °C [-58 ... +140 °F]
Relative humidity, condensation	≤ 90 % r. h. (non-condensing)
Ingress protection	IP65 per IEC/EN 60529
Weight in kg	<ul style="list-style-type: none"> ■ With gas filling: approx. 0.8 kg [1.76 lb] ■ With fill fluid: approx. 1.2 kg [2.64 lb]

Electrical connection	
Connection type	Cable socket with compression fitting M20 x 1.5
Wire cross-section	Wire cross-section max. 2.5 mm ²
Switch contact	<ul style="list-style-type: none"> ■ 1 magnetic snap-action contact ■ 2 magnetic snap-action contacts ■ 3 magnetic snap-action contacts
Switching direction	<ul style="list-style-type: none"> ■ Falling pressure ■ Rising pressure
Switching function at nominal pressure	<ul style="list-style-type: none"> ■ Normally open ■ Normally closed ■ Change-over contact (max. 2 switch points)
Circuit	<ul style="list-style-type: none"> ■ Galvanically connected (not for change-over contact) ■ Galvanically isolated
Switching accuracy	
Switch point = calibration pressure P _E	See accuracy specifications
Switch point ≠ calibration pressure P _E	Parallel to the reference isochore of the calibration pressure
Max. switching voltage	AC 250 V
Switching power	<ul style="list-style-type: none"> ■ With gas filling: 30 W / 50 VA, max. 1 A ■ With fill fluid: 20 W / 20 VA, max. 1 A
Material of switch contacts	80 % Ag / 20 % Ni, gold-plated
	Further information on magnetic snap-action contacts in data sheet AC 08.01
High-voltage test 100 %	2 kV, 50 Hz, 1 s

Calibration valve

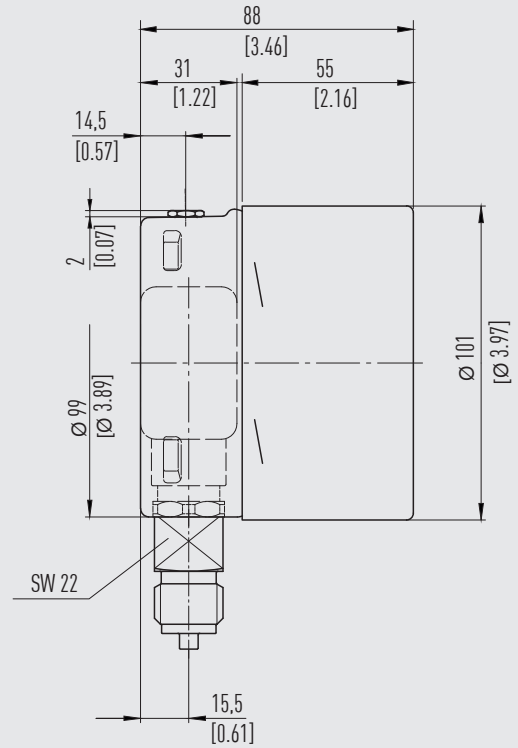
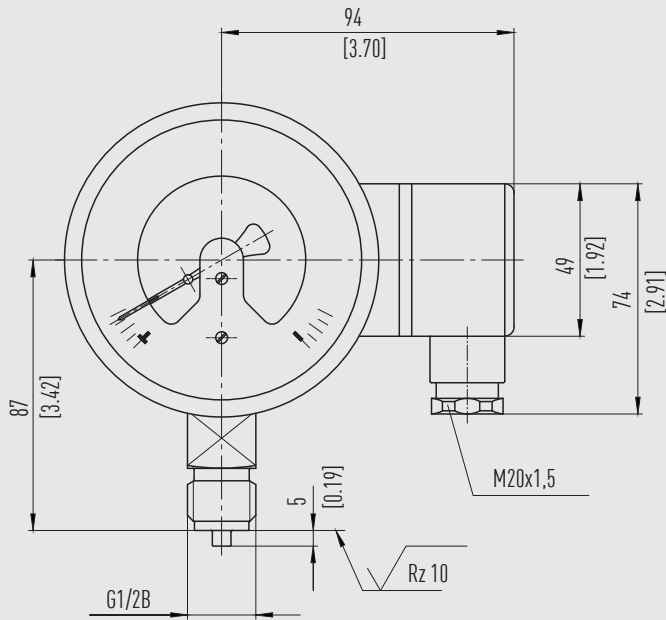
All weld seams are qualified in accordance with DIN EN ISO 15613 in combination with DIN EN ISO 15614-1 and DIN EN ISO 15614-12 by the notified body TÜV Süd.

Tightening torque of test connection: 40 Nm ±10 %

Gas-tight: leakage rate ≤ 1 · 10⁻⁸ mbar · l/s

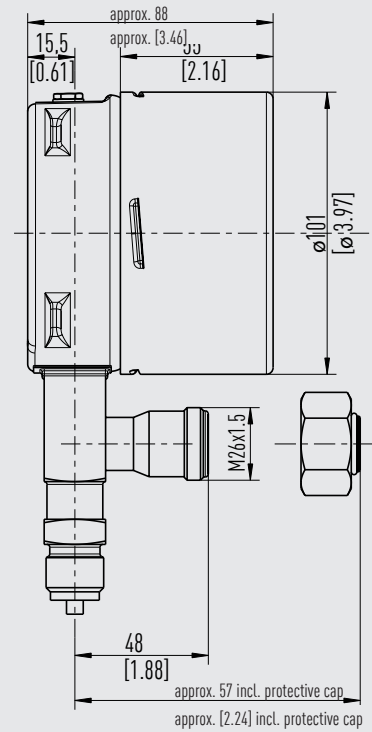
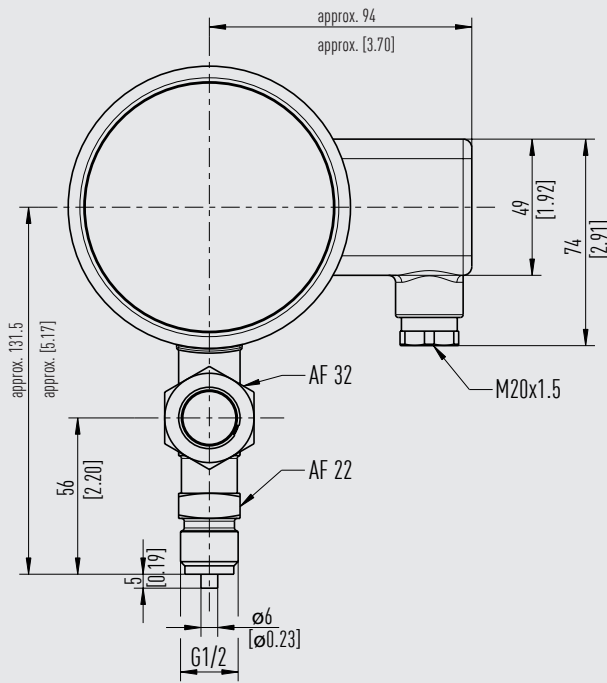
Dimensions in mm [in]

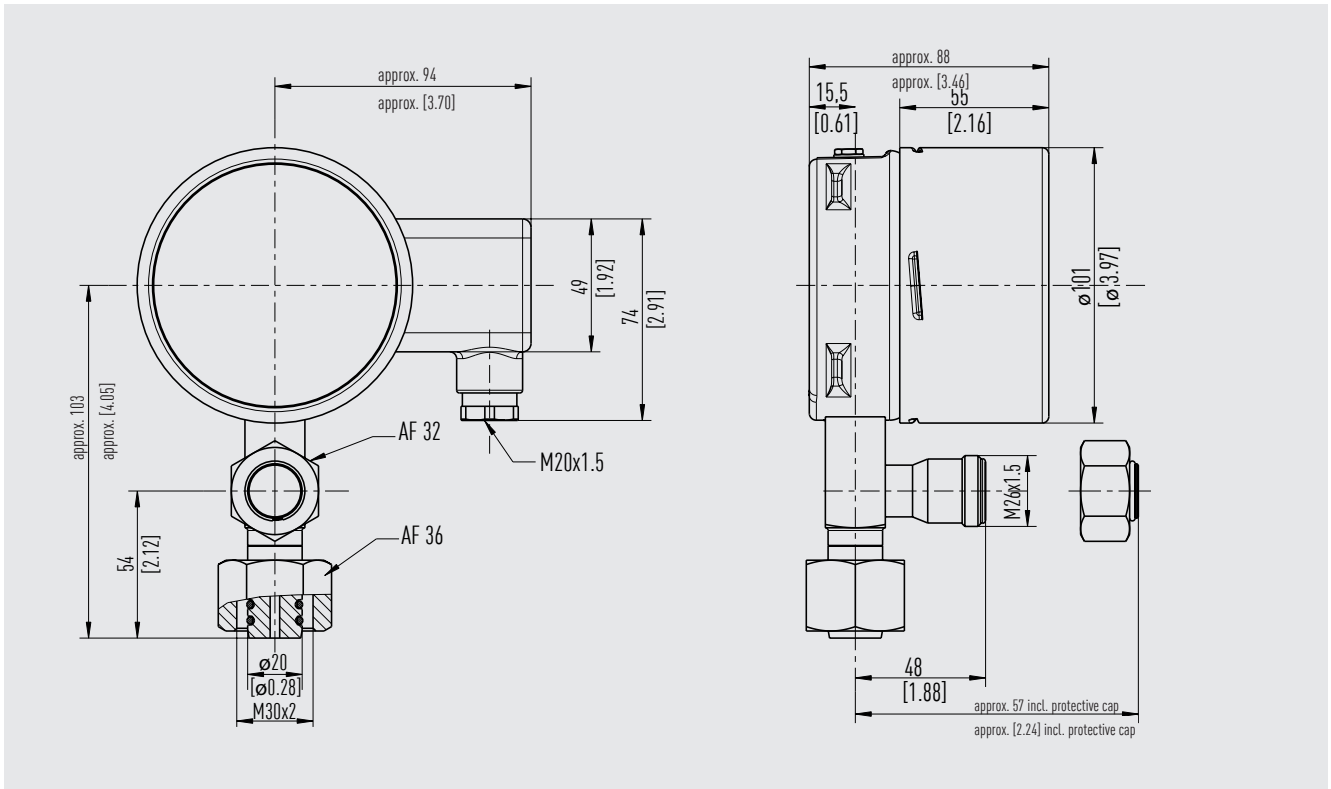
Version without calibration valve



Version with calibration valve

Any arrangement of the test valve possible





Approvals


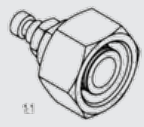
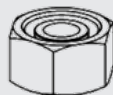

Logo	Description	Country
CE	EU declaration of conformity Low Voltage Directive	European Union

Manufacturer's declaration

Logo	Description
-	China RoHS directive

→ For approvals and certificates, see website

Accessories for version with calibration valve

Model	Description	Order number
	Calibration valve for retrofitting to gas density monitors and other leakage detection systems already installed in the field, model GLTC-CV Any arrangement of the test valve possible Other process connections on request → See WIKA data sheet SP 61.16	14484687
	Adapter from test connection (M26 x 1.5) to quick coupling	14146937
	Protective cap for test connection (M26 x 1.5)	14193772
	Calibration system for gas density instrumentation → See WIKA data sheet SP 60.08	14424241

Ordering information

Model / Process connection / Pressure unit / Measuring range / Filling pressure / Switch configuration / Gas mixture / Options / Accessories

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