

Gas Density Monitors



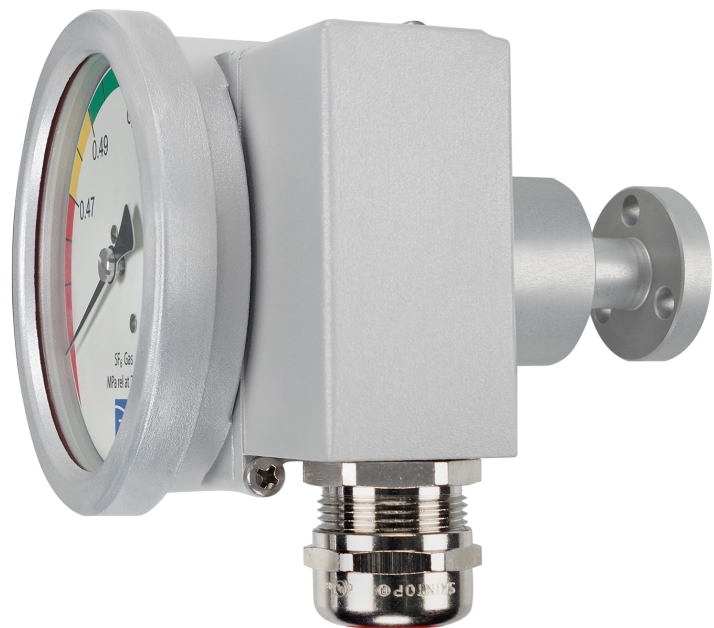
Gas Density Monitor **Densistat D100/D100iO** for SF₆ and other gases for outdoor or indoor use

Densistat D100 / D100i0

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The Densistat D100 / D100i0 incorporates an analog gauge for relative pressure, referenced to 20 °C. The type D100i0 also features a zero pressure indicator. Microswitches inside the device respond reliably to any decreases in the density and pressure of the SF₆ insulating gas. The pressure connection is either straight or angled (several options are available).

- Pressure range 0 ... 10 bar rel.
(0 ... 145 psi rel.)
- Various pressure connectors available
- High switching accuracy and long-time stability
- Rugged design (IP 65)
- Up to 4 microswitches
- Analog pressure gauge, can be calibrated
- Additional zero pressure dial (Model D100i0)



Design

The D100 consists of the following principal components:

- Strong aluminum die-cast housing
- Cable housing with cable gland
- Analog pressure gauge with colored scale (100 mm diameter)
- Additional zero pressure dial (only D100i0)
- Electronic PCB with up to four microswitches and terminal block, switching function configurable as NO or NC
- Aluminum pressure connector
- SF₆ gas-filled reference gas bellows system

The cable housing with cable gland and the connecting cable with connectors form a single, easy-to-detach unit. The device can be supplied with a concentric pressure connection or various angled connections.

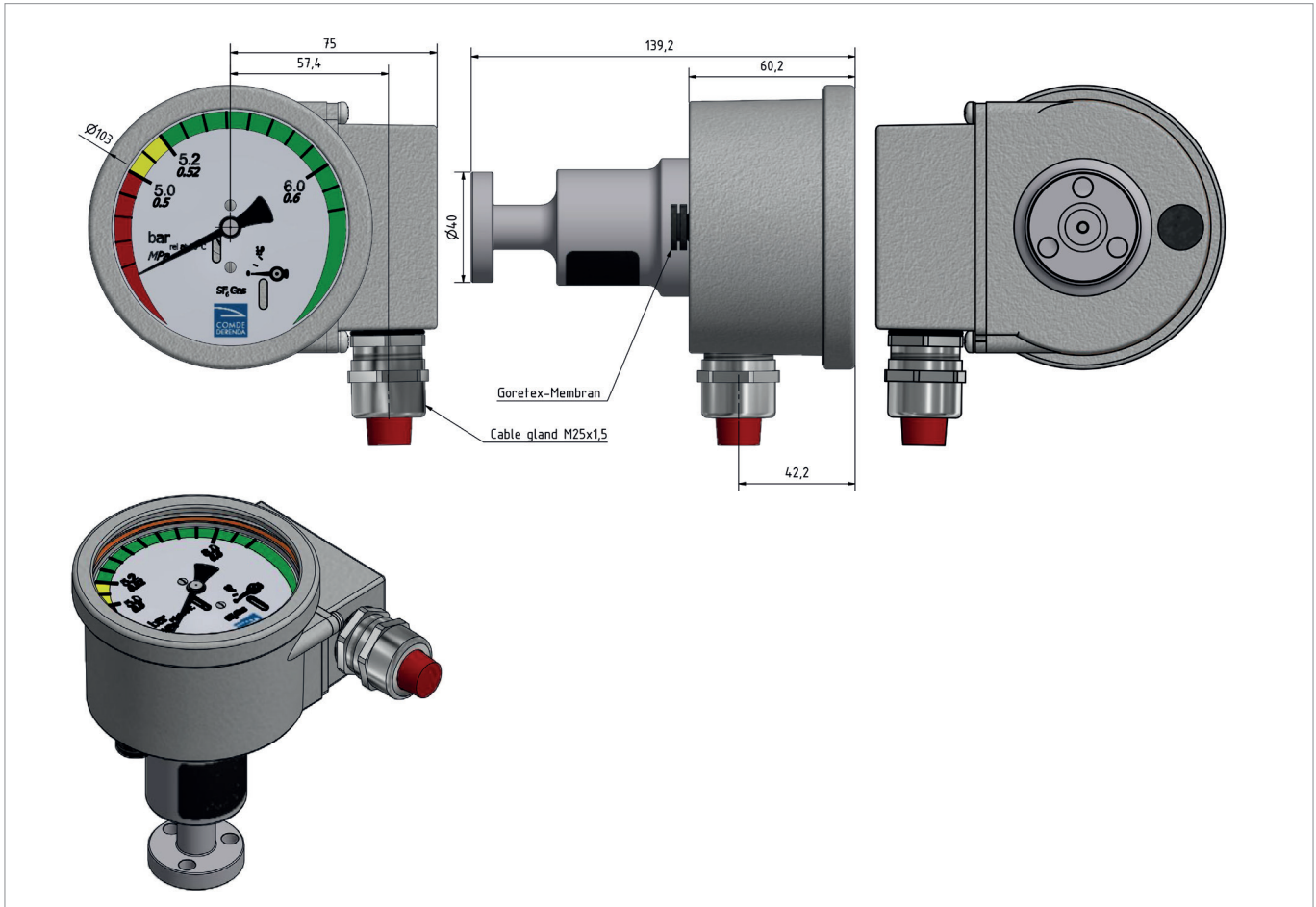
Operating principle

The Densistat D100 / D100i0 monitors gas density by way of a reference chamber filled with SF₆ gas. The gas and reference chambers are separated by a metal bellows. A pressure difference corresponds to a density difference between the two chambers and deflects the metal bellows. The movement of the bellows is transmitted by a switch rod. A switching plate activates the microswitches whose purpose is to indicate a pressure drop.

The operating points for triggering the signal can be set at the factory according to the customer's requirements by way of lockable screws (plungers). Up to four microswitches with changeover contacts can be installed in the housing. The microswitches are installed on a circuit board together with a multipole terminal block within the housing. The connecting cable is connected to the terminal block and exits the device through a cable gland.

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The analog pressure gauge shows the relative pressure of the SF₆ gas, referenced to 20 °C in the gas chamber. A change in gas density attributable to a leak is indicated by deflection of the needle. The colors and transitions on the dial can be specified by the customer and calibrated to the relevant values.

The arrangement of the measuring mechanism and the use of vibration-resistant microswitches rule out any shock-induced chattering at the switching contacts. In order to prevent condensation, the unit is equipped with a Gore-Tex® equalizing membrane.

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Technical Data

Indicator	Analog indicator Ø 100 mm
Connector	Phoenix Combicon or PTR terminal clamp
Cable gland	M25 × 1,5 EMC
Microswitches	3 or 4 included, max. 2.5 mm² IAW IEC 60947
Protection	IP 65 IAW IEC 60529
Vibration stability	> 4 g (20 ... 80 Hz), 0.05 bar from switching point

Pressure range	0 ... 10 bar rel. / 0 ... 145 psi rel.
Hysteresis	< 0.1 bar / 1.5 psi (typ.)
Indicator tolerance at 20 °C	± 0.1 bar / 1.5 psi
Switching accuracy	± 0.08 bar / 1.2 psi
Response threshold	± 0.05 bar / 0.7 psi
Reference chamber leakage rate	< 0.005 bar/year (5 * 10 ⁻⁹ mbar * l * s ⁻¹)

Electric strength	2 kV (50/60 Hz) to ground
Rated surge voltage	5 kV (1.2/50 µs) to ground IAW IEC 61000-4-5
Electric switch rating, Resistive load (inductive load)	AC 250 V, 10 (2) A DC 250 V, 0.2 (0.2) A DC 220 V, 0.25 (0.2) A DC 125 V, 0.4 (0.25) A DC 110 V, 0.5 (0.3) A DC 60 V, 1.5 (0.4) A DC 48 V, 1.9 (0.7) A DC 24 V, 3.0 (2) A

Operating temperature	-40 ... +70 °C / -40 ... +158 °F -60 ... +70 °C / -76 ... +158 °F (optional)
Storage temperature	-60 ... +80 °C / -76 ... +176 °F
Weight (concentric pressure connector)	790 g
Weight (angled pressure connector)	850 g

Material pressure connection	AlSi1MgMn, anodized
Material housing and connection box	AlSi9MgMn (Silafont-36), powder coated RAL 9006
Material reference gas bellows system	Stainless steel 1.4541 (bellows) / 1.4301 (bellows housing)
Material indicator window	Safety glass
Material type plate, resistant to UV, ozone, climate, chemicals, and solvents	3M Scotchcal foil 3690

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