

## Gas Density Monitors



Gas Density Monitor  
**Densistat D56Hybrid**  
for SF<sub>6</sub> and other gases  
for outdoor or indoor use

## Densistat D56Hybrid

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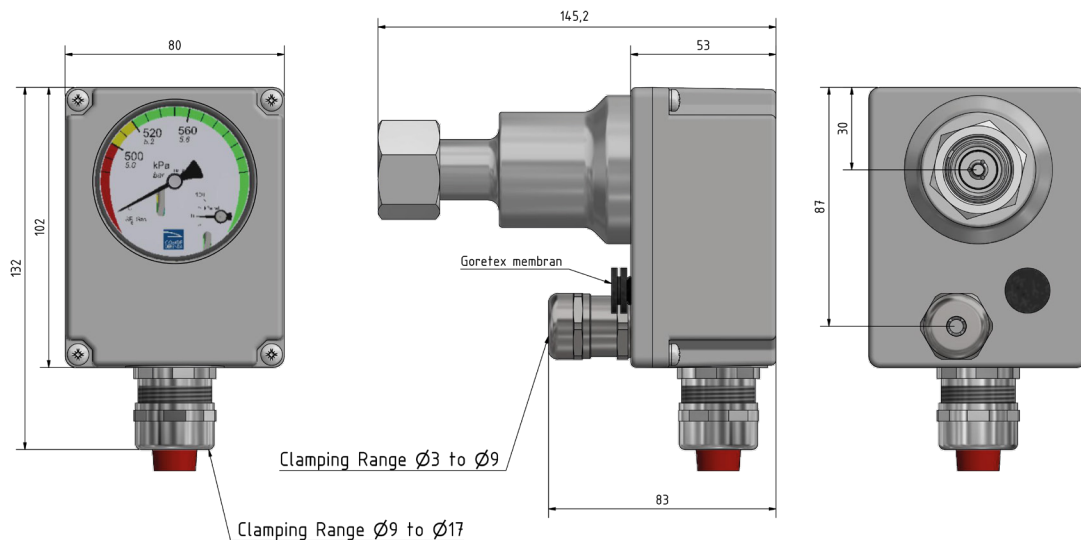
The Densistat D56Hybrid is suitable for indoor and outdoor use. A sensor continuously determines the current pressure. The device features an analog gauge for relative pressure, referenced to 20 °C. The measured values are also provided as a data output signal. Microswitches inside the device respond reliably to any decreases in the density and pressure of the 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 67 / IP X5)
- 3 microswitches
- Analog pressure gauge, can be calibrated
- Additional data transmission via interface RS-485 or analog 4 ... 20 mA



## Densistat D56Hybrid

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### Design

The D56Hybrid consists of the following principal components:

- Strong aluminum die-cast housing with cable glands
- Analog pressure gauge with colored scale (55 mm diameter)
- Additional zero pressure dial (optional)
- Electronic PCB with three microswitches and terminal block, switching function configurable as NO or NC
- Data output RS-485 or analog 4 ... 20 mA
- Aluminum pressure connector
- Reference gas bellow, filled with SF<sub>6</sub> gas

The cover with cable gland and the connecting cable with connectors form a single unit that is easy to dismantle with a screwdriver. The device can be supplied with a concentric pressure connection or various angled connections.

### Operating principle

The Densistat D56Hybrid monitors gas density by way of a reference chamber filled with SF<sub>6</sub> gas. The gas and reference chambers are separated by a metal bellows.

A density and pressure difference between the two chambers 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). Three microswitches with changeover contacts can be installed in the housing. The microswitches are installed on a circuit board together with a multipole terminal block. The connecting cable is attached to the terminal block and exits the device through a cable gland.

The analog pressure gauge shows the relative pressure of the SF<sub>6</sub> 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 device operates with DC voltage. The power consumption varies according to the measured value (4 ... 20 mA).

Via interface RS-485, the device continuously transmits the relative pressure as a digital output signal to a connected network PC.

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

Pressure range	0 ... 10 bar rel. / 0 ... 145 psi rel.
Hysteresis	< 0.1 bar / 1.5 psi (typ.)
Switching accuracy	± 0.08 bar / 1.2 psi
Response threshold	± 0.05 bar / 0.7 psi
Reference chamber leakage rate	< 0.005 bar/year ( $5 \cdot 10^{-9}$ mbar * l * s <sup>-1</sup> )
Operating temperature	- 40 ... +70 °C / - 40 ... +158 °F
Storage temperature	- 60 ... +80 °C / - 76 ... +176 °F
Indicator size	Ø 55 mm
Indicator tolerance at 20 °C	± 0.1 bar
Power supply	8 ... 30 VDC

Vibration stability	> 4 g (20 ... 80 Hz), 0.05 bar from switching point
Protection	IEC 60529: IP 67 / IP X5
Connector	Phoenix Combicon or PTR terminal clamp
Standard 3 micro switches	IEC 60947, max. 2.5 mm <sup>2</sup>

Electrical 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
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Interface	RS-485 or analog 4 ... 20 mA
Baud rates	9600 (standard), 14400, 19200, 38400, 56000, 115200

Electric strength	2 kV (50/60 Hz) to ground
Surge voltage	IEC 61000-4-5 5 kV 1.2/50 µs to ground
Cable gland switching contacts	M25 × 1.5 EMC
Cable gland data cable	M16 x 1.5

Material pressure connection	AlSi1MgMn, anodized
Material housing and connection box	AlSi12, powder coated RAL 9006
Material reference gas bellows system	1.4541 (bellows) / 1.4301 (bellows housing)
Material indicator window	Plexiglas molding compound 8N
Material type plate, resistant to UV, ozone, climate, chemicals, and solvents	3M Scotchcal foil 3690
Weight	630 g

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Ed. 2020-03