Gas Density Monitor (GDM)  
Model 233.52.100 with External Temperature Sensor

Applications
- Gas density monitoring of closed SF₆ tanks
- For outdoor installation
- Compensation of gas temperature inside tank

Special Features
- Modified pressure gauge with bourdon tube and liquid filled case with external temperature sensor
- Wetted parts: stainless steel
- Local readout with alarm contacts
- Hermetically sealed, therefore no influence by atmospheric pressure fluctuation and differences in altitude
- Serial number

Description

Nominal size in mm  
100

Accuracy (relating to the measuring span)
- ± 1 % at ambient temperature +20 °C
- ± 2.5 % at ambient temperature range -20 … +60 °C and with calibration pressure as reference isochore (reference diagram KALI-Chemie AG, Hannover, prepared by Dr. Döring 1979)

Scale ranges
All standard ranges and +/- ranges with a measuring span of min. 1.6 bar und max. 25 bar (SF₆ gas pressure at +20 °C)

Calibration pressure \( P_E \)
As ordering specifications

Permissible temperature
- Ambient: -20 ... +60 °C (gas phase)
- Storage: -50 ... +60 °C

Alarm contacts / Contact rating
Max. 3 magnetic snap-action contacts, to make or break, with galvanic isolation, switching points non-adjustable and secured
- Contact rating: 20 W / 20 VA, max. 1 A
- Material of contacts: 80 % Ag / 20 % Ni, 10 µm gold plated

Switching accuracy in temperature range -20 ... +60 °C
- If switching point is equal \( P_E \): As measuring span
- If switching point is not equal \( P_E \): Moved parallel to calibration pressure

High-voltage test
- 2 kV, 50 Hz, 1s (wiring versus case)
Electrical connection
Cable box with cable gland M20 x 1.5
Connection cross-section max. 2.5 mm²

Process connection
Stainless steel, radial entry,
similar to EN 837, G ½ B (male),
22 mm flats

Pressure element
Stainless steel, welded
Gas tight: leakage rate ≤ 1 · 10⁻⁸ mbar · l / s
Test method: spectrometry of helium mass

Movement
Stainless steel
Metal bellows (temperature compensation)

Dial
Aluminium, red-green section as ordering specifications

Pointer
Aluminium, black

Case
Stainless steel
with liquid filling
Gas tight: leakage rate ≤ 1 · 10⁻⁵ mbar · l / s

Window
Acylic glass

Bezel ring
Cam ring (bayonet type), stainless steel
secured with 3 welding spots

Ingress protection
IP 65 per EN 60 529 / IEC 529

External temperature sensor with thermowell
Capillary: stainless steel
Capillary length
incl. sensor: 600 mm
Protective cover: stainless steel, minimum curve
radius 50 mm
Sensor: stainless steel, welded
Gas tight: leakage rate ≤ 1 · 10⁻⁸ mbar · l / s
Test method: spectrometry of helium mass
Mounted in thermowell: per male nut screw, 17 mm flats
Thermowell: stainless steel, G ½ B, 27 mm flats,
length 160 mm

Weight
approx. 1.4 kg

Options
- Adjustable alarm contact switching points
- Material of contacts
- Plugable cable box, back mounted
- Other length of capillary: max. 3000 mm
- Permissible temperature of ambient -50 … +80 °C
- Dial printed and scaled as ordering specifications
Dimensions in mm

Standard version

<table>
<thead>
<tr>
<th>Alarm contacts model 821</th>
<th>Dimensions in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets and version of contact</td>
<td>b</td>
</tr>
<tr>
<td>Single and double contacts</td>
<td>88</td>
</tr>
<tr>
<td>Double contacts separate circuits without adjustable arms</td>
<td>88</td>
</tr>
<tr>
<td>Triple contacts</td>
<td>96</td>
</tr>
<tr>
<td>Triple contacts separate circuits without adjustable arms</td>
<td>96</td>
</tr>
<tr>
<td>Double contacts separate circuits with adjustable arms</td>
<td>96</td>
</tr>
</tbody>
</table>
Ordering examples

233.52.100 with external temperature sensor / 0 … 5 bar / 3.9 bar / 3.9 bar / see table
Filling pressure: 3.9 bar
Calibration pressure: 3.9 bar
Red section: 0 … 3.5 bar
Green section: 3.5 … 5 bar
Capillary length incl. sensor: 3000 mm

<table>
<thead>
<tr>
<th>Contact</th>
<th>Switching point [ bar ]</th>
<th>Alarm contacts Function and working direction</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>makes with falling density</td>
<td>yes</td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
<td>makes with falling density</td>
<td>yes</td>
</tr>
</tbody>
</table>

233.52.100 with external temperature sensor / -1 … 6 bar / 4.5 bar / 3 bar / see table
Filling pressure: 4.5 bar
Calibration pressure: 3 bar
Permissible ambient temperature: -50 … +80 °C
Dial: per attached specification sheet
Capillary length incl. sensor: 1900 mm

<table>
<thead>
<tr>
<th>Contact</th>
<th>Switching point [ bar abs ]</th>
<th>Alarm contacts Function and working direction</th>
<th>Galvanic isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>makes with falling density</td>
<td>yes</td>
</tr>
<tr>
<td>2</td>
<td>3.3</td>
<td>makes with falling density</td>
<td>yes</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>breaks with rising density</td>
<td>yes</td>
</tr>
</tbody>
</table>

Ordering information
Model / Norminal size / Scale range / No. and size of connection / Filling pressure / Calibration pressure / Capillary length incl. sensor / Options

Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.