High Precision Pressure Transducer

Series 8201
Version H

Application
High-precision pressure sensors from the 8201 series provide exact measurements while exhibiting very little sensitivity to mechanical stresses. Their application therefore goes well beyond research and development laboratories. They are also outstandingly suited to industrial use in quality assurance or for measurement and control tasks in production. Their robust mechanical and electrical construction guarantees good long-term stability and high reliability, while being resistant to aggressive media – which can be measured in liquid or gaseous states.

The structure of the sensors includes no mechanical moving parts, which is why they show so little sensitivity to impact and vibration.

The pressure sensors can be configured with options to suit the user. Standard types are available ex-stock, and customized customer versions can also be provided.

Aeras of application are:
► Research and development
► Test rigs
► Mechanical engineering
► Plant control and monitoring

Description
The medium reaches the interior of the measuring chamber through the pressure port. This is closed by a membrane which is welded on, and which represents the sensor element itself. The bending of this membrane increases in proportion to the applied pressure. Four strain gauges, interconnected as a Wheatstone bridge, are attached at the rear. The physical magnitude of pressure is converted by the wire strain gauges into a change in electrical resistance. The resulting output signal is standardized to 1.0 mV/V.

The pressure is measured relative to the surrounding air pressure, and the space behind the membrane is therefore connected to the atmosphere through a small, protected opening in the housing.

All the sensors can be supplied with an integrated amplifier having a voltage or current output. The input to the integrated amplifier is protected against reverse polarity connection, and the output is protected against overvoltage.

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- Measuring ranges from 0 ... 30 bar to 0 ... 500 bar
- Accuracy < 0.1 %
- Output 0 ... 5 V, 0 ... 20 mA or 4 ... 20 mA available
- Suitable for liquid and gaseous media
- Can be used for dynamic and static measurements
- Made of stainless steel, reliable and sturdy
- Standardized sensitivity to 1.0 mV/V
### Technical Data

<table>
<thead>
<tr>
<th>Order Code (see Order Code)</th>
<th>Measuring Range</th>
<th>Resonance Frequency [kHz]</th>
</tr>
</thead>
<tbody>
<tr>
<td>8201-5030-xxxxx</td>
<td>0 ... 30 bar</td>
<td>5.0</td>
</tr>
<tr>
<td>8201-5050-xxxxx</td>
<td>0 ... 50 bar</td>
<td>7.0</td>
</tr>
<tr>
<td>8201-5100-xxxxx</td>
<td>0 ... 100 bar</td>
<td>10.0</td>
</tr>
<tr>
<td>8201-5200-xxxxx</td>
<td>0 ... 200 bar</td>
<td>12.5</td>
</tr>
<tr>
<td>8201-5300-xxxxx</td>
<td>0 ... 300 bar</td>
<td>15.0</td>
</tr>
<tr>
<td>8201-5500-xxxxx</td>
<td>0 ... 500 bar</td>
<td>20.0</td>
</tr>
</tbody>
</table>

### Electrical values

- **Bridge resistance:** full bridge circuit of foil strain gauge, 350 Ω, nominal. Calibration resistor: 100 kΩ. The bridge output voltage resulting from a shunt of this value is shown in the test certificate.

- **Excitation voltage:** recommended 5 V DC, maximum 10 V DC.

- **Nominal sensitivity:** standardized; 1.0 mV/V ± 0.25 %.

### Environmental conditions

- **Range of operating temperature:** -30 °C ... 120 °C.

- **Nominal temperature range:** 0 °C ... 70 °C.

- **Influence of temperature on zero:** ≤ ±0.005 % F.S./K.

- **Influence of temperature on sensitivity:** ≤ ±0.005 % F.S./K.

### Mechanical values

- **Measurement accuracy:** Combined error consisting of non-linearity, hysteresis and variation: ≤ ±0.1 % F.S., as specified at BFSL.

- **Volume change:** negligibly small.

- **Dead volume:** 5.8 cm³.

- **Hysteresis and variation:** < ± 0.1 % F.S., as specified at BFSL.

- **Volume change:** negligibly small.

- **Dead volume:** 5.8 cm³.

### Test and Calibration Certificate

- **Nominal temperature range:** 0 °C ... 60 °C.

- **Influence of temperature on zero:** ≤ ±0.25 % F.S.

### Accessories

- **Thread adapter:** material 1.4571, for following connecting threads.

- **External thread M 16 x 1.5**

- **External thread G 1/2” A**

- **External thread R 1/4” (max. 500 bar)**

- **External thread M 20 x 1.5**

- **Internal thread 3/4 - 16 UNF**

- **Internal thread 1/4 - 18 NPT (max. 500 bar)**

### Connecting Cables

- **Standard sealing ring set (included in scope of delivery)**

- **Teflon-coated Viton® thrust and O-ring**

- **Mating plug (included in scope of delivery)**

### Order Code

**High precision pressure transducer 8201-3XXX-H□□A**

- **without amplifier**

- **integrated amplifier** with voltage output 0 ... 5 V

- **integrated amplifier** with current output 0 ... 20 mA

- **integrated amplifier** with current output 4 ... 20 mA

### Factory Calibration Certificate (WKS)

Calibration of a pressure transducer separately as well as connected to an indicator. Standard is a certificate with 11 points, starting at zero, running up and down in 20% increments and covering the complete measuring range. Special calibrations on request. Calculation of costs by base price plus additional costs per point.

### Technical Data of the Internal Amplifier

<table>
<thead>
<tr>
<th>Pin</th>
<th>Voltage output</th>
<th>Current output</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>excitation +</td>
<td>excitation +</td>
</tr>
<tr>
<td>B</td>
<td>signal - and excitation +</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>signal - and excitation -</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>signal +</td>
<td>signal +</td>
</tr>
<tr>
<td>E</td>
<td>signal -</td>
<td>NC</td>
</tr>
<tr>
<td>F</td>
<td>signal +</td>
<td>NC</td>
</tr>
</tbody>
</table>

- **Wiring Code**

- **Mounting torque:** max. 3 Nm.

- **Pressure port:** internal thread M 16 x 1.5.

- **Diaphragm pressure transducer with hermetically sealed measuring chamber (without internal sealing elements).**

- **Material:** stainless steel, 1.4548.9.

- **Pressure port:** internal thread M 16 x 1.5.

- **Sealing:** Support ring and O-ring, is included in scope of delivery.

- **Mounting torque:** max. 3 Nm.

- **Electrical connection:**

- **6 pin bayonet model connector** Souriau 851 07A 10 - 6 P.

- **Wiring code:** pins A + B excitation voltage positive, pins C + D excitation voltage negative, pins E signal output negative, pins F signal output positive.

- **Dimensions:** refer to dimensional drawing.

### Order Information

- **Model 9910**

- **Model 99545**

- **Model 99945**

- **Model 99545-0000-0160030**

### CAD data

The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.


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