High Pressure Transducer
Model 8221

Application
The reliability and safety of a sensor is extremely important, particularly in high-pressure applications such as water-jet cutting equipment and hydraulic circuits. The dynamic loading encountered in these applications requires the use of sensors that are specially adapted for high pressure ranges. It is exactly these tough requirements that are satisfied by the model number 8221 sensor. With dynamic pressures, for example, an unlimited number of measurements can be taken if the pressure lies within the range from 0 ... 70% full scale.

The strong construction allows liquid or gaseous media to be measured in the laboratory, production department or in mobile hydraulic applications.

Range of applications:
- Laboratory
- Production
- Aeronautical engineering
- Cutting equipment
- Hydraulics
- Test benches

Measuring ranges from 0 ... 1000 bar to 0 ... 5000 bar
Accuracy ≤ 0.2 % F.S.
Medium temperature range from -30 °C ... 120 °C
Ideal for dynamic measurements
Protection class IP66
Digital calibration with the option of integrated instrumentation amplifier

Description
The monolithic sensor membrane guarantees a high level of precision, reliability and safety, since the medium does not come into any contact with welded seams. Great emphasis has been placed on safety in the mechanical design. It is fitted with relief holes, which permit the measurement of static and dynamic pressures, even under unfavorable environmental conditions.

In order to facilitate the exchange of the sensors without having to recalibrate the following electronics, the sensitivity of the high-pressure sensor is standardized at 1.0 mV/V. The sensor is fitted with an integrated shunt resistor to enable easy calibration or checking of the subsequent electronics.

In combination with the option of an integrated amplifier (0 ... 10 V, 0 ... 5 V and 4 ... 20 mA) the new, innovative function for digital calibration can be used: All that is necessary is to touch the marked surface of the sensor with the enclosed magnetic pen.

Resistant to shock and vibration.
**Technical Data**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Measuring Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>8221-6001</td>
<td>0 ... 1000 bar</td>
</tr>
<tr>
<td>8221-6002</td>
<td>0 ... 2000 bar</td>
</tr>
<tr>
<td>8221-6003</td>
<td>0 ... 3500 bar</td>
</tr>
<tr>
<td>8221-6004</td>
<td>0 ... 4000 bar</td>
</tr>
<tr>
<td>8221-6005</td>
<td>0 ... 5000 bar</td>
</tr>
</tbody>
</table>

**Electrical values**

<table>
<thead>
<tr>
<th>Voltage output</th>
<th>Current output</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 ... 30 VDC</td>
<td>10 ... 30 VDC</td>
</tr>
<tr>
<td>max. 13 mA</td>
<td>max. 32 mA</td>
</tr>
</tbody>
</table>

**Environmental conditions**

- Operating temperature: -30 °C ... 105 °C
- Nominal temperature range: -10 °C ... 85 °C
- Medium temperature range: -30 °C ... 120 °C
- Influence of temperature on zero: ±0.02 % F.S./K
- Influence of temperature on sensitivity: ±0.02 % F.S./K

**Mechanical values**

- Accuracy: sum of linearity error, hysteresis error and precision error: ≤0.2 % F.S.
- Kind of measurement: against atmosphere (relative)
- Measuring range: refer to table
- Dead volume: 74 mm³
- Overload: 100 % over capacity or maximum 6 kbar
- Burst pressure: 300 % over capacity or maximum 7.5 kbar
- Resonance frequency: all measuring ranges 2 kHz
- Dynamic performance: recommended: 70 % of capacity

**Material**

- Measuring element: stainless steel 15-5PH (similar 1.4545)
- Housing: AISI 304
- Pressure port: autoclave F-250-C; internal thread 9/16-18 UNF

**Technical Data of the Internal Amplifier**

<table>
<thead>
<tr>
<th>Voltage output</th>
<th>Current output</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 pin bayonet model connector</td>
<td>0</td>
</tr>
<tr>
<td>4 pin model connector M 12 x 1, series 713</td>
<td>1</td>
</tr>
</tbody>
</table>

**Order Code**

- High Pressure Transducer 8221-XXXX-V1
  - 6 pin bayonet model connector
  - 4 pin model connector M 12 x 1, series 713

**Order Information**

- High Pressure Transducer, measuring range 0 ... 2000 bar, internal amplifier with voltage output 0 ... 5 V, M 16 x 1.5

**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.

**Accessories**

- Connecting cable for sensors without amplifier, bending radius > 5 mm; PVC insulation, shielded, length 3 m
- for burster bench-top units other than 9163
  - 99141-545H-0160030
  - 99209-545B-0160030
  - with open, color-coded and tinned cable ends
  - 99954-000G-0160030
  - with open cable ends
  - 9900-K304
- Mating connector bayonet (included in delivery)
  - 99495
- Mating connector M 12 x 1, series 713
  - 9900-V624
- Connecting cable with coupling socket M12 x 1, series 713, shielded, bending radius > 5 mm; PVC insulation, standard length 5 m
  - 9990-K304

**Test and Calibration Certificate**

Included in delivery, et al. with specification of zero output, sensitivity and shunt calibration factor.

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**Technical Data**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Without amplifier</th>
<th>With amplifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Signal +</td>
<td>Signal +</td>
<td>Connection for +</td>
</tr>
<tr>
<td>B Signal -</td>
<td>Signal -</td>
<td>Connection for -</td>
</tr>
<tr>
<td>C Excitation +</td>
<td>Excitation +</td>
<td>NC</td>
</tr>
<tr>
<td>D Excitation -</td>
<td>Excitation -</td>
<td>NC</td>
</tr>
<tr>
<td>E Calibration shunt</td>
<td>Calibration *</td>
<td>Calibration *</td>
</tr>
<tr>
<td>F Calibration shunt</td>
<td>Calibration *</td>
<td>Calibration *</td>
</tr>
</tbody>
</table>

**Order Code**

8221-6002-V1061
8221-6002-V1000

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**Order Code**

820-006505
820-6021-01061
820-6021-01060