Pressure Transducer
Model 8103

Application
This transducer can be used anywhere thanks to its small size. Designed to work without a measuring chamber (uses a flush front diaphragm instead), this transducer is ideal for any measurements where the material to be measured may leave problematic residues. The range of suitable applications is even greater thanks to a choice of screw-on or weld-on adapters.

Areas of use:
► Bottling plants, food industry
► Mixing facilities for the chemicals industry
► Pharmaceuticals
► Cosmetics industry
► Bioengineering

Description
These pressure transducers are made entirely of titanium and therefore have outstanding resistance to corrosion. These convert the pressure-induced deflection of the diaphragm into a change in electrical resistance, which can be amplified, measured and processed by external electronic circuitry. The transducers come in a choice of measuring ranges: up to 20 bar for measurements with respect to atmospheric pressure, or a range of 50 bar and above for measurements with respect to a sealed atmosphere.

- Measuring ranges between 0 ... 5 bar and 0 ... 1000 bar
- Accuracy < 0.5 %
- Flush mounted diaphragm
- Made of titanium
- Not magnetic
- Protection class IP67

Delivery: 2 - 3 weeks
Warranty: 24 months
**Technical Data**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Measuring Range</th>
<th>Resonance Frequency [kHz]</th>
</tr>
</thead>
<tbody>
<tr>
<td>8103-5005</td>
<td>0 ... 5 bar</td>
<td>28</td>
</tr>
<tr>
<td>8103-5010</td>
<td>0 ... 10 bar</td>
<td>28</td>
</tr>
<tr>
<td>8103-5020</td>
<td>0 ... 20 bar</td>
<td>36</td>
</tr>
<tr>
<td>8103-5050</td>
<td>0 ... 50 bar</td>
<td>54</td>
</tr>
<tr>
<td>8103-5100</td>
<td>0 ... 100 bar</td>
<td>77</td>
</tr>
<tr>
<td>8103-5200</td>
<td>0 ... 200 bar</td>
<td>108</td>
</tr>
<tr>
<td>8103-5500</td>
<td>0 ... 500 bar</td>
<td>160</td>
</tr>
<tr>
<td>8103-6001</td>
<td>0 ... 1000 bar</td>
<td>229</td>
</tr>
</tbody>
</table>

**Electrical values**

- Bridge resistance: foil strain gauge 1000 Ω ± 0.5 %
- Excitation voltage: 5 V, max. 10 V DC or AC
- Nominal sensitivity:
  - measuring range 0 ... 5 bar: 1 mV/V, nominal
  - measuring range ≥ 0 ... 10 bar: 2 mV/V, nominal

**Environmental conditions**

- Limit temperature range: -55 °C ... 150 °C
- Nominal temperature range: 0 °C ... 100 °C
- Influence of temperature on zero:
  - measuring range 0 ... 5 bar: < ± 0.04 % F.S./K
  - measuring range ≥ 0 ... 10 bar: < ± 0.02 % F.S./K
- Influence of temperature on sensitivity: < ± 0.02 % F.S./K

**Mechanical values**

- Accuracy:
  - Combined error consisting of non linearity, hysteresis and vibration: < ± 0.5 % F.S.
- Kind of measurement:
  - measuring range ≤ 20 bar: against atmosphere
  - measuring range ≥ 50 bar: against sealed atmosphere
- Measuring ranges: refer to table
- Overload: 400 % over capacity
- Dynamic performance:
  - recommended: 70 % of capacity
  - maximum: 100 % of capacity
- Design: pressure transducer with flush mounted diaphragm
- Material: diaphragm and housing made of titanium grade 5 (Material 3.7165)
- Pressure connector: refer to accessories, threaded and welding adapter
- Sealing:
  - The sealing of the transducer is made by an O-ring 18.77 x 1.78 (Shore 90), which is included in scope of delivery. The use of a support ring is recommended for dynamic pressures of above 200 bar.
  - Mounting torque: 2 Nm
  - Protection class acc. to EN 60529: IP67
  - Sock resistance acc. to IEC 60068-2-27: 1000 g/1 msec.
  - Vibration resistance acc. to IEC 60068-2-6: max. 30 g at 10 ... 2000 Hz
  - Surface roughness: > 0.4 µm
  - Dimensions: see dimensional drawing
  - Weigh: 40 g
- Electrical connection:
  - shielded, Teflon isolated cable, color coded with open ends for soldering, bending radius > 30 mm, length 2 m

**Order Information**

- Pressure transducer, measuring range 20 bar Model 8103-5020
- O-ring, Shore 90 A, Nitril ButadIn Model 8103-Z001
- Support ring made of polycarbonat Model 8103-Z002
- Welding adapter with O-ring, material 1.4057, refer to drawing Model 8103-Z003
- O-ring PTFE (Teflon) Model 8103-Z004
- Threaded adapter with O-ring, material Sandviken 1802 (SIS 2382) with connecting thread T = 1/4", refer to drawing Model 8103-Z005

**Test and Calibration Certificate**

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

**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.

**Order Code 81WKS-81XX**