High Precision Pressure Transducer
Series 8201
Version N

Measuring ranges from 0 ... 5 bar to 0 ... 1000 bar
Accuracy < 0.25 %
Output 0 ... 5 V, 0 ... 20 mA or 4 ... 20 mA available
For liquid and gaseous media
Can be used for dynamic and static measurements
Made of stainless steel, reliable, sturdy

Application
Model number 8201 precision pressure sensors are robust, economical, and are available in standard measuring ranges. Their good technical specification and high reliability make them optimum for measuring pressure in all fields of machine construction, process technology, as well as in measurement and control technology.

The pressure transducers are easy to handle and immune to shock loads and vibrations as they are designed without moving parts.

All pressure transducers without an internal amplifier have a standardized output signal of 1.0 mV/V. This enables the user to change a transducer in a measuring chain as liked without following readjustment of the electronic.

Customized designs are available on request.

Areas of application are:
► Hydraulic or pneumatic machines
► Mechanical engineering
► Plant control and monitoring

Description
The measuring element of the precision pressure transducer consists of a diaphragm. On its reverse side a strain gauge rosette is applied, which is an assembly of 4 active strain gauges arranged in a bridge circuit. The pressure is measured against atmosphere, that means the space behind the diaphragm is connected to the surrounding atmosphere (relative) via a small outlet in the housing.

Each transducer is available with an internal amplifier, a so-called pressure transmitter, with voltage or current output. The input of the internal amplifier is immune against polarity reversal and the output is immune against over-voltage.
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>8201-5005-xxxx</td>
<td>0 ... 5 bar</td>
<td>1.5</td>
</tr>
<tr>
<td>8201-5010-xxxx</td>
<td>0 ... 10 bar</td>
<td>3.0</td>
</tr>
<tr>
<td>8201-5020-xxxx</td>
<td>0 ... 20 bar</td>
<td>3.5</td>
</tr>
<tr>
<td>8201-5050-xxxx</td>
<td>0 ... 50 bar</td>
<td>10.0</td>
</tr>
<tr>
<td>8201-5100-xxxx</td>
<td>0 ... 100 bar</td>
<td>15.0</td>
</tr>
<tr>
<td>8201-5200-xxxx</td>
<td>0 ... 200 bar</td>
<td>20.0</td>
</tr>
<tr>
<td>8201-5300-xxxx</td>
<td>0 ... 300 bar</td>
<td>20.0</td>
</tr>
<tr>
<td>8201-5500-xxxx</td>
<td>0 ... 500 bar</td>
<td>20.0</td>
</tr>
<tr>
<td>8201-5800-xxxx</td>
<td>0 ... 800 bar</td>
<td>20.0</td>
</tr>
<tr>
<td>8201-6001-xxxx</td>
<td>0 ... 1000 bar</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Electrical values

Bridge resistance: full bridge circuit of foil strain gauges 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
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 temp. measuring range ≤ 10 bar ± 0.005 % F.S./K on zero:
Influence of temp. measuring range ≤ 10 bar ± 0.005 % F.S./K on sensitivity:
Volume change: negligibly small
Overload: measuring range ≤ 300 bar 50 % over capacity
Overload: measuring range ≤ 500 bar 50 % over capacity
Overload: measuring range ≤ 1000 bar > 50 % over capacity

Mechanical values

Measurement accuracy: Combined error consisting of non-linearity, hysteresis and variation: < ± 0.25 % F.S., as specified at BSFL
Kind of measurement: pressure measurement against atmosphere (relative)
Dead volume: measuring range ≤ 10 bar 5.8 cm³
Dead volume: measuring range ≤ 20 bar 2.5 cm³
Volume change: negligibly small
Overload: measuring range ≤ 300 bar 50 % over capacity
Overload: measuring range ≤ 500 bar 50 % over capacity
Overload: measuring range ≤ 1000 bar > 50 % over capacity

Dynamic performance:
measuring range ≤ 10 bar recommended 50 % of capacity maximum 70 % of capacity
measuring range ≤ 20 bar recommended 70 % of capacity maximum 100 % of capacity

Design: Diaphragm pressure transducer with hermetically sealed pressure chamber (without internal sealing elements).
Material: stainless steel; 1.4548.9
Pressure connection: 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 connector
Souriau 851 07A 10 - 6 P
Dimensions: refer to dimensional drawing
General tolerance for length measurement acc. to ISO 2788-f
Weight: approx. 420 g ... 650 g
Protection class: acc. to EN 60529 IP65
Mating connector: Amphenol 62-GB-16F-10-6S or Souriau 851-06E-C-10-6S

Technical Data of the Internal Amplifier

<table>
<thead>
<tr>
<th>Voltage output</th>
<th>Current output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excitation voltage</td>
<td>15 ... 30 V DC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>max. 40 mA</td>
</tr>
<tr>
<td>Connection technology</td>
<td>3 wire</td>
</tr>
<tr>
<td>Load impedance</td>
<td>&lt; 200 Ω + 40 Ω/V (U_m = 15 V DC)</td>
</tr>
<tr>
<td>Nominal temperature range</td>
<td>0 °C ... 60 °C</td>
</tr>
<tr>
<td>Range of operating temperature</td>
<td>0 °C ... 60 °C</td>
</tr>
<tr>
<td>Cut-off frequency</td>
<td>(&lt; -3 dB) 1 kHz</td>
</tr>
<tr>
<td>Protection against short-circuit and polarity</td>
<td>yes</td>
</tr>
<tr>
<td>Zero offset and span setting</td>
<td>± 0.25 % F.S.</td>
</tr>
</tbody>
</table>

Order Code

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>8201-XXXXX-N</td>
<td>High precision pressure transducer</td>
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</tbody>
</table>

Order Information

Precision pressure transducer, range 0 ... 100 bar, with internal amplifier for 0 ... 5 V
DAkkS Calibration Certificate
According to standard DKD-R 6-1 for 21 points in 10 %-steps up and down.

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

Thread adapter, material 1.4571 for connecting transducers
External thread M 16 x 1.5
External thread G 1/2" A
Internal thread R 1/4" - 18 NPT (max. 500 bar)
TFE sealing ring set for critical applications; Teflon-coated Viton® thrust and O-ring
Mating connector (is included in scope of delivery)

Wiring Code

Pin | without Amplifier | Voltage output | Current output |
---|-------------------|----------------|---------------|
| A | excitation + | excitation + | |
| B | excitation - | signal - and excitation - | |
| C | excitation + | signal + | |
| D | excitation - | signal - and excitation - | |
| E | signal - | NC | NC |
| F | signal + | NC | NC |

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

Connecting Cables

For sensors without amplifier, 6 wire, shielded PVC isolated cable, bending radius > 5 mm, length of 3 m
to burster desktop indicators with 12 pin connection
Model 82911
to SENSORMASTER 9163
Model 99209-5450-0160030
with open, color coded and tinned cable ends
Model 9986
for sensors with internal amplifier, with open, color coded and tinned cable ends
Model 99545-0000-0160030
Other cable lengths or customized cables on request.

Order Code

High precision pressure transducer 8201-XXXXX-N without amplifier 02
integrated amplifier with voltage output 0 ... 5 V 33
integrated amplifier with current output 0 ... 20 mA 37
integrated amplifier with current output 4 ... 20 mA 39

Model 82DKD-XX

Order Code 82WKS-82XX