burster

# High Precision Pressure Transducer

## Series 8201
## Version N

| | |
|---|---|
| Code: | 8201 N EN |
| Delivery: | ex stock/3 weeks |
| Warranty: | 24 months |

CAD data 2D/3D for this sensor:
Download directly at www.traceparts.com
Info: refer to data sheet 80-CAD-EN

- **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**
- **Standardized output signal to 1.0 mV/V**

**Now also available:**
**USB Interface or**
**CANopen**

8201 N EN

### Application

The precision pressure transducers model 8201 N are of a sturdy and compact design, they are low-priced and may be available in many measuring ranges. Because of their outstanding technical data and a high degree of reliability they offer an interesting alternative to pressure measuring applications in all fields of mechanical engineering, process engineering, aeronautics and astronautics.

The pressure transducers are easy to handle and immune to shock loads and vibrations as they are designed without moving parts. They have a small dead volume. Their design makes them well suitable for both dynamic and static measurements of liquid or gaseous media. The measuring element and housing of transducers with measuring range ≥ 0 ... 50 bar are made of one piece of stainless steel. This guarantees absolute sealing and insensitivity against aggressive media. For pressure transducers with ranges ≤ 0 ... 20 bar critical media can cause damages in the area of the sensor body's welding seams. In this case please contact us.

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. Differential pressures may be measured with only one evaluation device.

Customized designs are available on request.

### 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 via a small outlet in the housing. This is the reason why this atmosphere has to be clean and dry. The medium to be measured is led via the pressure port to the diaphragm.

As a result of pressure acting on the diaphragm, it is deformed and the resistance of the strain gauges is changed. By applying a voltage to the strain gauge bridge the resistance change is transformed into an output voltage which is directly proportional to the pressure.

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. The amplifier circuitry is designed in a way that low-prized power supply units may also be used. The electrical connection is generated by a MIL specified housing connector.
The pressure port is formed by an M 16 x 1.5 internal metric thread with sealing ring groove. Other connections may be realized by adapters out of the burster product range.

## Technical Data

| Order Code | Measuring Range | Resonance Frequency [kHz] |
|---|---|---|
| 8201-5005-N021A | 0 ... 5 bar | 1.5 |
| 8201-5010-N021A | 0 ... 10 bar | 3.0 |
| 8201-5020-N021A | 0 ... 20 bar | 3.5 |
| 8201-5050-N021A | 0 ... 50 bar | 10.0 |
| 8201-5100-N021A | 0 ... 100 bar | 15.0 |
| 8201-5200-N021A | 0 ... 200 bar | 20.0 |
| 8201-5300-N021A | 0 ... 300 bar | 20.0 |
| 8201-5500-N021A | 0 ... 500 bar | 20.0 |
| 8201-5800-N021A | 0 ... 800 bar | 20.0 |
| 8201-6001-N021A | 0 ... 1000 bar | 20.0 |

### 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
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 temp. on zero: measuring range ≤ 0 ... 10 bar ± 0.005 % F.S./K
measuring range ≥ 0 ... 20 bar ± 0.01 % F.S./K

Influence of temp. on sensitivity: measuring range ≤ 0 ... 10 bar ± 0.005 % Rdg./K
measuring range ≥ 0 ... 20 bar ± 0.01 % Rdg./K

### Mechanical values

Combined error consisting of non-linearity, hysteresis and variation: < ± 0.25 % F.S.

Kind of measurement: pressure measurement against atmosphere

Dead volume: measuring range ≤ 0 ... 10 bar 5.8 cm³
measuring range ≥ 0 ... 20 bar 2.5 cm³

Volume change: negligibly small

Overload: measuring range ≤ 0 ... 300 bar 50 % over capacity
measuring range ≥ 0 ... 500 bar 50 % over capacity

Burst pressure: measuring range ≤ 0 ... 500 bar >100 % over capacity
measuring range 0 ... 1000 bar > 50 % over capacity

Dynamic performance:
measuring range ≤ 0 ... 10 bar recommended 50 % of capacity
maximum 70 % of capacity
measuring range ≥ 0 ... 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:
Sealing of the transducer is ensured by thrust and O-ring which are parts of delivery. For critical applications a Teflon coated Viton® O-ring with thrust ring is also available.
refer to accessories

Mounting torque: max. 3 Nm

Electrical connection:
6 pin bayonet 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

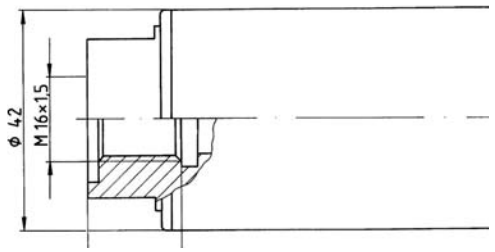
General tolerance for length measurement acc. to ISO 2768-f

Weight: approx. 420 g ... 650 g

Protection class: acc. to EN 60529 IP65

Mating connector: model 9945
Souriau 851-06E-C-10-6S or Amphenol 62-GB-16F-10-6S in scope of delivery

**Dimensional drawing model 8201 N**




Version with measuring ranges ≤ 0 ... 10 bar are 15 mm longer

**The CAD drawing (3D/2D) for this sensor can be imported online directly into your CAD system.**
Download via www.burster.com or directly at www.traceparts.com. For further information about the burster traceparts cooperation refer to data sheet 80-CAD-EN.

## Technical Data of the Internal Amplifier

Excitation voltage: 15 ... 30 V

Power consumption: voltage output max. 40 mA
current output max. 65 mA

Connection technology: 3 wire

Output resistance: 200 Ω (15 V) ... 800 Ω (from 24 V)

Cut-off frequency: (- 3 dB) 1 kHz

Range of operating temperature: 0 °C ... 60 °C

Output resistance: 18 Ω

| Wiring code: | | | | |
|---|---|---|---|---|
| pin | A | excitation | positive |
| pin | B | ground | |
| pin | C | ground | |
| pin | D | signal output | positive |
| pins | E + F | not connected | |

Dimensions: Transducers with internal amplifier and range ≤ 0 ... 10 bar are 50 mm longer; range ≥ 0 ... 20 bar are 15 mm longer

## Order Information

Precision pressure transducer, range 0 ... 100 bar, with internal amplifier for 0 ... 5 V **8201-5200-H331A**

## Accessories

Thread adaptor, material 1.4571 for following connecting threads

External thread M 16 x 1,5 **Model 8281**

External thread G 1/2" A **Model 8283**

External thread R 1/4" (max. 500 bar) **Model 8285**

Standard sealing ring set (included in scope of delivery) **Model 82911**

PTFE sealing ring set for critical applications; Teflon-coated Viton® thrust and O-ring **Model 82910**

## Connecting Cables

for transducers plug-in connection and bridge output, completely with connector and socket, 6 wire, shielded PVC isolated cable, bending radius > 5 mm, standard length of 3 m.
to burster desktop indicators with 12 pin connection **Model 9911**

to SENSORMASTER 9163 **Model 99209-545D-0160030**

with open, color coded and tinned cable ends **Model 9986**

for transducers with internal amplifier; with open, color coded and tinned cable ends **Model 99545-000D-0160030**

Other cable lengths or customized cables on request.

## Option

| | |
|---|---|
| Option 33 | internal amplifier for voltage output 0...5 V |
| Option 37 | internal amplifier for current output 0...20 mA |
| Option 39 | internal amplifier for current output 4...20 mA |
| Option 41 | internal USB interface |

Evaluation and configuration software
- DigiVision model 9205-P001, maximal 200 measurements/s
- DigiVision model 9205-P100, allows up to 2500 measurements/s

| | |
|---|---|
| Option 42 | internal CANopen bus, resolution 16 bit, measuring rate 1 MBaud |
| Option DKD | Calibration certificate acc. to standard DKD-R 6-1 for 21 points in 10 %-steps up and down |
| Option WKS | WKS manufacturer calibration for 11 points in 20 % steps up and down, each point done twice |