

Subminiature Pressure Transducer

Model 8111

Code:	8111 EN
Delivery:	ex stock/6 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 0 ... 2 bar up to 0 ... 350 bar
- For static and dynamic measurements
- Made of titanium
- Membrane diameter 3.6 mm
- Absolute pressure measurement optional
- Temperature compensation - 40 °C ... 120°C optional

Application

Thanks to their minimal dimensions, the subminiature pressure sensors can be used in almost every branch of engineering. Suitable for both gaseous and liquid media, they can be fitted in any orientation, and used for both static and dynamic measurements. The sensors are chiefly used in the fields of tool and gear making, precision mechanics, aeronautical and space engineering and medical technology.

The miniaturized design of the pressure sensors means not only that they can be used in very tight spaces, but also that they can measure at high frequency while loading the system as a whole with very little mass. In combination with the options offered, such as protection class IP 67 and an extended nominal temperature range up to 120 °C, the user can specify optimum adaptation of the sensor to its environment.

Fields of application:

- ▶ Tool making
- ▶ Aeronautical engineering
- ▶ Food processing
- ▶ Special purpose machinery manufacturing
- ▶ Precision mechanics

Description

Design

The mechanical measuring element of the ultra-miniature pressure sensors is made as one piece, and is composed of a clamping ring and a diaphragm. It is made, like the entire sensor housing, of titanium, and is bonded to it in a laser welding process. Through special technology, the distorting forces in the sensor housing that arise inevitably when the sensor is mounted in its assembly thread are decoupled from the measuring membrane. As a result, the offset in the zero point caused by the process of assembling the sensor is reduced as far as possible.

The bending forces resulting from the pressure on the membrane are converted into an electrical signal by means of silicon strain gauges.

Model of measurement

The pressure measurement is relative to atmosphere. A small opening at the rear of the housing provides pressure equalization behind the measuring diaphragm, for which reason the ambient air (or the reference gas) must be dry, clean and non-corrosive. Optionally, the sensor can be obtained in a version that delivers absolute measurements.

Output voltage

The output voltage is quoted in the test record in mV/V – millivolts per volt – and is stated with reference to the rated pressure of the unit. The value of the output signal depends on the design of the membrane, and is proportional to the pressure exerted on it. The relationship between the voltage supplied to the bridge and the voltage output of the bridge is, again, directly proportional. The sensors can be energized by direct or alternating voltage.

Technical Data

Order Code	Measuring Range
8111-5002	0 ... 2 bar
8111-5005	0 ... 5 bar
8111-5010	0 ... 10 bar
8111-5020	0 ... 20 bar
8111-5050	0 ... 50 bar
8111-5100	0 ... 100 bar
8111-5200	0 ... 200 bar
8111-5350	0 ... 350 bar

Electrical values

Bridge resistance, input:	1500 Ω, nominal
Bridge resistance, output:	500 ... 800 Ω, nominal
Nominal excitation voltage:	max. 10 V DC
Sensitivity:	
measuring range 0 ... 2 bar	3 mV/V, nominal
measuring range ≥ 0 ... 5 bar	10 mV/V, nominal
Insulation resistance:	to 50 V DC ≥ 100 MΩ

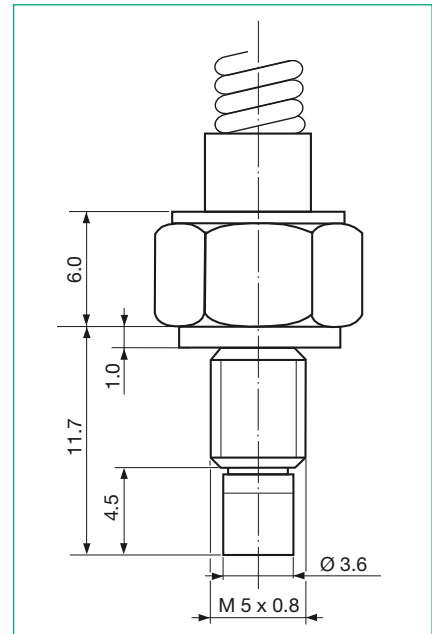
Environmental conditions

Range of operating temperature:	- 40 °C ... 120 °C
Nominal temperature range, compensated:	0 °C ... 60 °C
Influence of temperature on zero:	
measuring range 0 ... 2 bar	< ± 7.0 % F.S./60 K
measuring range ≥ 0 ... 5 bar	< ± 2.5 % F.S./60 K
Influence of temperature on sensitivity:	< ± 2.0 % Rdg./60 K

Mechanical values

Non-linearity:		
measuring range ≤ 0 ... 10 bar	< ± 0.35 % F.S.	
measuring range ≥ 0 ... 20 bar	< ± 0.25 % F.S.	
Hysteresis:		
measuring range ≤ 0 ... 10 bar	< ± 0.35 % F.S.	
measuring range ≥ 0 ... 20 bar	< ± 0.25 % F.S.	
Error of variation:	< ± 0.2 % F.S.	
Mode of measuring:	pressure measurement against atmosphere	
Change in volume:	negligibly small	
Overload:	100 % over capacity	
Burst pressure:	400 % over capacity	
Natural frequency:	100 kHz ... 800 kHz	
Dynamic load:		
recommended	70 % of capacity	
maximum	100 % of capacity	
Design:	flush mounted, welded diaphragm	
Material:	diaphragm and transducer housing made of titan	
Pressure connection:	external thread M 5 x 0.8	
Sealing:	self centering sealing ring included in scope of delivery	
Mounting torque:		
recommended	change of zero-point and sensitivity < 1 %	5 Nm
possible maximum		10 Nm
Electrical connection:		
4 wire, Teflon isolated, shielded cable, integrated bend protection, color coded, with open ends, diameter approx. 3 mm, length 2 m		
Wiring code:		
red	excitation voltage	positive
black	excitation voltage	negative
white	signal output	negative
green	signal output	positive
Dimensions:	see scale drawing	
Weight:	without / with cable approx. 5 g / 40 g	
Protection class:	acc. to EN 60529	IP50

Dimensional drawing model 8111



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.

Order Information

Subminiature pressure transducer, measuring range 0 ... 200 bar, absolute measuring, nominal temperature range - 40 °C ... 120 °C, protection class IP67 **8111-5200-T0B07000**

Accessories

Sealing ring, thickness 1.0 mm

Model 8111-Z005

Options

Measurement of absolute pressure	...-Txxxxxxx
Extension of compensated temperature range - 40 °C ... 120 °C	...-xxBxxxxx
Protection class IP67	...-xxxx7xxx

Manufacturer Calibration Certificate (WKS)

Standard factory calibration certificates quoting 11 points in 20 % increments for rising and falling pressure; each point is approached twice. Also available with evaluating electronics as a measurement chain.