

PIEZORESISTIVE OEM PRESSURE TRANSDUCERS

SERIES 8

ABSOLUTE- AND SEALED GAUGE PRESSURE

The Series 8 pressure sensors are extremely durable, even when exposed to fast pressure peaks. They have been developed especially for the measurement of high pressures. The Series 8 sensor for ranges 400...1000 bar uses a thicker glass feed through and a wire-bonded measuring cell.

A high-sensitivity piezoresistive silicon chip is used for pressure sensing. The chip is protected against ambient influences by a stainless steel housing sealed with a concentrically corrugated diaphragm. The housing is filled with silicone oil for the transfer of the pressure from the diaphragm to the sensing component.

All metal parts in contact with the pressure media are made of stainless steel AISI 316 L. The fully welded housing is vacuum-tight. The connecting pins allow direct PCB mounting or can be used for connecting cables.

Typical applications: Industrial processes, aviation electronics, servo controls, oil industry, robotics...

A Rugged Pressure Transducer

The piezoresistive chip immersed in silicone oil is welded into a housing made of stainless steel AISI 316 L.

High Sensitivity

A nominal signal of 200 mV is obtained at a supply current of 1 mA for all standard pressure ranges.

Flexibility

Versions: Absolute and sealed gauge pressure. 9 nominal measurement ranges from 10 to 1000 bar. Different materials and oil fillings (see options verso).

Quality

Each pressure transducer is subjected to comprehensive tests for its pressure response and temperature characteristics, and is delivered with an individual calibration certificate stating the characteristics as well as the results of all tests which were performed. Special testing is available if demanded by the customer.

The Series 8 can also be delivered with a laser welded media isolation diaphragm (see data sheet Series 3 L - 10 L). The new technique for laser welding stainless steel diaphragms further improves the resistance against crevice corrosion and still retains all the traditional performance, stability and quality for which KELLER is renowned.

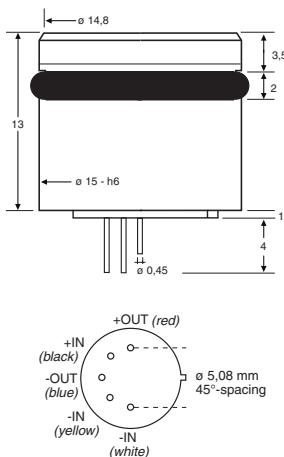


Series 8
Low Pressure

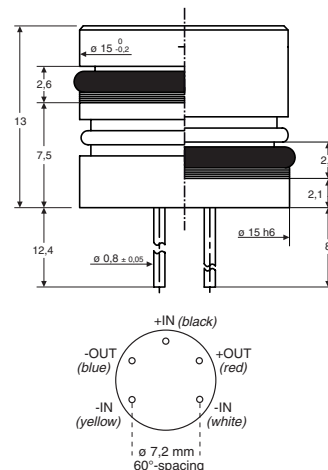


Series 8
High Pressure

Series 8 Low Pressure (10...200 bar)



Series 8 High Pressure (> 200...1000 bar)





KELLER

Specifications

Excitation I = 1 mA

Pressure Ranges (FS) and Overpressure in Bar. Signal Output in mV.

PAA-8	10	20						
PA-8	10	20	50	100	200	400	600	1000
Signal Output typ.*	225	225	225	225	225	225	225	225
Overpressure	20	40	100	200	300	600	900	1100

PAA: Absolute. Zero at vacuum PA: Sealed Gauge. Zero at atmospheric pressure (at calibration day) * ± 40%

Bridge Resistance @ 25 °C	Ω	3500	± 20%
Constant Current Supply	mA	1 nominal	5 max.
Insulation @ 500 VCC	MΩ	100	
Operating Temperature	°C	-30...100	-55...150 (optional)
Compensated Range	°C	0...50 ⁽¹⁾	-10...80 ⁽¹⁾
Storage Temperature	°C	-40...100	-60...150
Vibration (20...5000 Hz)	g	20	
Endurance (FS @ 25 °C)	Cycles	> 100 x 10 ⁶	FS

Housing and Diaphragm	Stainless Steel, AISI 316 L
Seal Ring	Viton ⁽¹⁾ , Ø 12 x 1,5 mm
Oil Filling	Silicone Oil ⁽¹⁾
Weight	13 g
Dead Volume Change @ 25 °C	< 0,1 mm ³ / FS
Electrical Wires (optional)	0,09 mm ² , 12 x Ø 0,1 mm, Silicone sheathed, øØ 1,2 mm, Length 7 cm ⁽¹⁾

Accuracy ⁽²⁾	%FS	0,5 typ. ⁽¹⁾	1 max.
Offset at 25 °C	mV	< 5 mV (compensated with R5 of 20 Ω ⁽³⁾)	
Temperature Error		0...50 °C	-10...80 °C -55...150 °C
– Zero	mV / °C	< 0,025	< 0,05 < 0,075
– Sensitivity	% / °C	< 0,02	< 0,05 < 0,07
Long Term Stability typ.	mV	0,5	0,75 1,25
Natural Frequency (Resonance)	kHz	> 30	

- ⁽¹⁾ Others on request.
⁽²⁾ Including linearity, hysteresis and repeatability. Linearity calculated as best straight line through zero.
Note: Generally, accuracy and overload is improved by factor of 2 to 4 if the sensor is used in the range of 0...50 %FS.
⁽³⁾ External compensation, potentiometer not supplied.

Options

- Platinum- or Hastelloy C-276 diaphragm. Gold-plated diaphragm.
- Transducer all Hastelloy C-276
- Oil for low temperatures. Fluorinated oil. Olive oil
- Special characteristics: Linearity, overpressure, lower TC-zero
- Special tests
- All pressure ranges between 10 and 1000 bar
- Other temperature ranges
- Compensation PCB fitted

PA-8/1000 bar/8467.8 ^(a)		SN 22747 ^(b)		51
^(c) Temp [°C]	^(d) Zero [mV]	^(e) -510 [mV]	^(f) Comp [mV]	^(g) dZero [mV]
-9.2	-13.3	-7.6	-0.9	-0.4
1.0	-13.4	-7.5	-0.8	-0.3
26.1	-13.7	-7.3	-0.5	0.0
50.8	-14.3	-7.1	-0.3	0.2
80.8	-15.1	-6.8	-0.0	0.5
COMP R2 = 510 kOhm ^(h)		R4 = 27.0 Ohm ^(h)		1
ZERO	-0.5 mV ⁽ⁱ⁾			
SENS	0.171 mV/bar at 1.000 mA ⁽ⁱ⁾			
SENS	0.683 mV/bar at 4.000 mA ⁽ⁱ⁾			
LIN	^(k) [bar]	^(l) [mV]	^(m) Lnorm [%FS]	⁽ⁿ⁾ Lbfsl [%FS]
	0.000	0.0	0.00	0.14
	500.000	85.0	-0.19	-0.14
	1000.000	171.1	0.19	0.14
High Pressure Test Ok ^(o)				
Lot 5.0412.00 ^(p)				
Test 500 Volt Ok ^(q)				
Supply 1.000 mA ^(r)				
27.06.06 ^(s) ----- FLOH.G03CkS ^(s)				

Each sensor is delivered with a calibration sheet with the following data:

- (a) Type (PA-8) and range (1000 bar) of pressure sensor
- (b) Barcode & serial number of pressure sensor (not standard)
- (c) Test temperatures
- (d) Uncompensated zero offset in mV
- (e) Zero offset values, in mV, with resistance R1 (+) or R2 (-), in kΩ (for factory computation only)
- (f) Zero offset, in mV, with calculated compensation resistors
- (g) Temp. zero error, in mV, with compensation resistors
- (h) Compensation resistor values R1 / R2 and R3 / R4
- (i) Offset with compensation resistors R1/ R2 and R3 / R4 fitted (fine adjustment of zero with R5 potentiometer)
- (j) Sensitivity of pressure sensor
- (k) Pressure test points
- (l) Signal at pressure test points
- (m) Linearity (best straight line through zero)
- (n) Linearity (best straight line)
- (o) Results of long term stability
- (p) Lot (on request, identification of silicon chip)
- (q) Voltage insulation test
- (r) Excitation (constant current)
- (s) Date of test -----Test equipment

Remarks:

- The indicated specifications only apply for constant current supply. The sensor should be excited between 0,5 and 5 mA. The sensor signal is proportional to the current.
- If exposed to extreme temperatures, the compensation resistors should have a temperature coefficient of < 50 ppm/°C. Sensor and resistors can be exposed to different temperatures.
- The sensors may be ordered with integrated compensation resistors (surcharge).

