PIEZOCRYST
ADVANCED SENSORICS GMBH

High Temperature Miniature Pressure Sensor

- ✓ Robust layout derived from a well-proven design
- ✓ Single crystalline $GaPO_4$ sensing elements
- ✓ High signal to noise ratio
- ✓ No pyroelectric effect or popcorn noise
- ✓ Up to 560°C and 650°C short term
- ✓ Various shapes and custom designs

For temperatures up to
650 °C
1200 °F

R&D measurement tasks differ profoundly from those for serial applications. Environmental boundary conditions like temperature, mechanical stress or heat flux are often poorly known. Furthermore, testing time is usually limited and the measurement position new, so there is either no data or very little data to compare. This complex situation demands sensors which deliver a reliable signal which is not influenced by other physical quantities.

The CP5x1 is a versatile miniature pressure sensor perfectly suited for measurements in extreme conditions in R&D where space is limited. A particular focus of the design is the simple integration of the sensor in the setup. With the robustness of a piezoelectric sensor, as well as a high natural frequency and the exceptional signal quality of $GaPO_4$ crystal elements, the CP5x1 boosts the limits for R&D applications in hostile environments. It can tolerate excursions to extreme temperatures with high gradients, mechanical stress and still produce a reliable and stable output.

Specifications

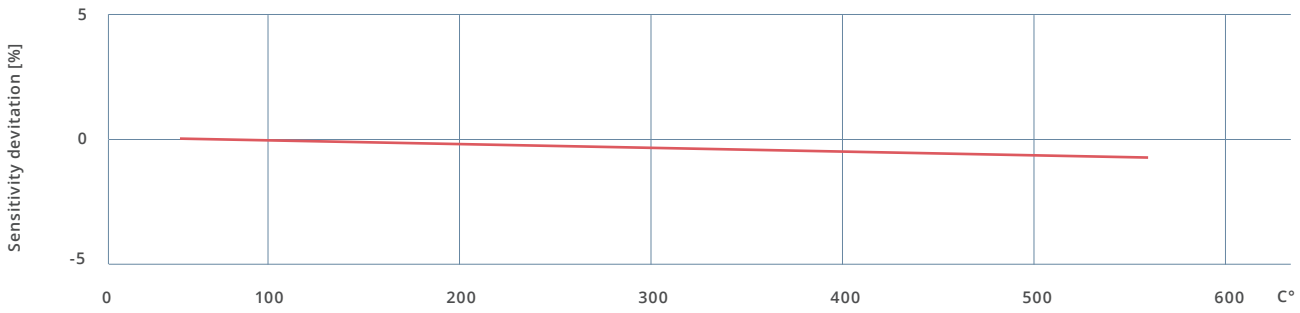
Name	CP5x1
Operating principle	Piezoelectric charge output
Sensing element	Industrially grown single-crystal $GaPO_4$ (gallium phosphate)
Dynamic measuring range	0 ... 50 bar (0 ... 725 psi)
Overload pressure	> 100 bar (1450 psi)
Sensitivity (nominal)	20 pC/bar (1.3 pC/psi)
Linearity	≤ 0.5 % FSO (0 ... 50 bar, 0 ... 725 psi)
Operating temperature *	
Continuous	-55°C ... +560°C (-40°F ... +1040°F)
Short term (< 100 hours)	-55°C ... +650°C (-40°F ... +1200°F)
Internal insulation resistance	> 10^{10} Ω (25°C, 77°F), >10^{6} Ω (600°C, 1112°F)
Acceleration sensitivity	axial ≤ 0.8 mbar/g (0.01 psi/g) radial ≤ 0.3 mbar/g (0.004 psi/g)
Frequency range	1 Hz to 50 kHz (resonant frequency > 120 kHz)
Capacitance (nominal, incl. 1m cable)	150 pF pole/ground
Mounting torque	2 Nm
Housing material	Nickel based super alloy, hermetically welded

* Temperature of sensor head and hard line cable

Available dimensions	
X	11 mm or 19.3 mm
Y	M5x0.8 or 10-32 UNF-2A
Cable	2 mm hard line cable
Bending radius	hard line cable: 16 mm (1 bend), 75 mm (up to 20 bends)
Connector	10-32 UNF-2A
Max. connector temperature	500°C (930°F)

Piezocryst reserves the right to change specifications and accessories without notice.

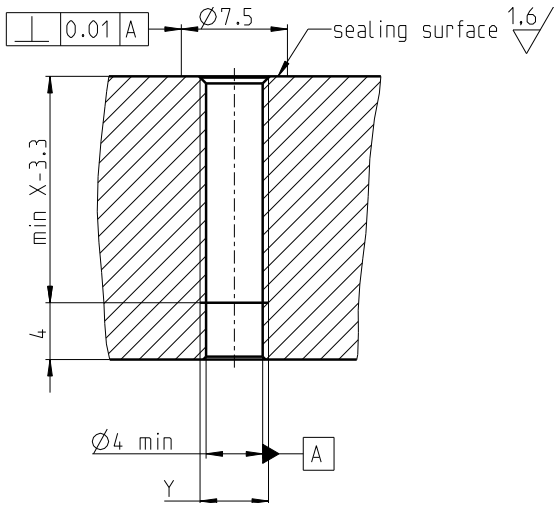
Calibration and Thermal Sensitivity



ISO 9001 certified calibration at +20°C with dead weight tester (3, 6, 8, 10, 12, 20, 30, 50 bar).
Sensitivity and linearity are determined according to DIN16086

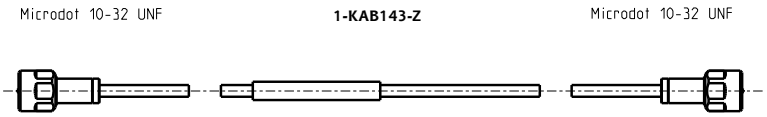
Sensor & Mount Dimensions

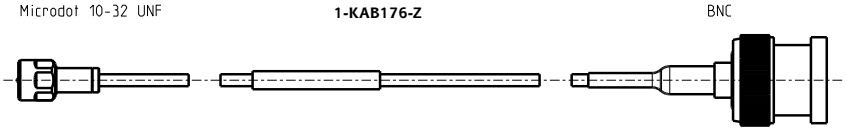
X	11 mm or 19.3 mm
Y	M5x0.8 or 10-32 UNF-2A

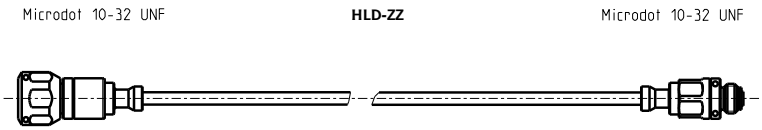


All dimensions are in mm.

Extension Cable Options







Available Cable length and Ordering Code:

Length	KAB143*	KAB176*	HLD**
0.5 m	1-KAB143-0,5	-	-
1 m	1-KAB143-1	1-KAB176-1	-
2 m	1-KAB143-2	1-KAB176-2	-
3 m	1-KAB143-3	1-KAB176-3	HLD-03
5 m	1-KAB143-5	-	HLD-05
7 m	1-KAB143-7	1-KAB176-7	HLD-07
10 m	1-KAB143-10	1-KAB176-10	HLD-10

*Teflon Softline Cable
**Hardline Cable

ATEX Certification

The CP5x1 series is Ex approved and therefore suitable for hazardous environments.

Europe	LCIE 17 ATEX 3027 X
International	IECEx LCIE 17.0024X

Scope of Supply

Name	
Sensor	CP5x1
Extension cable	1m Teflon™ UNF to UNF cable
Coupling	UNF to BNC coupling
Calibration sheet	✓

Accessoires

Name	
Hardline Cable	2mm Hardline 10-32 UNF cable 450°C max (length: 0.3 m, 1 m, 3 m)
Extension Cable	Teflon coated cable 10-32 UNF to 10-32 UNF or BNC; Hardline Cable 10-32 UNF to 10-32 UNF
Mounting Tool	✓
Machining Tool for Mount	✓

Ordering Code

CP5_ _._ _ _

Sensor Dimensions		Hardline Cable		Hardline Cable Length	
21	Y=10-32 UNF X=19.3	0	2 mm Hardline Cable	03	0.3 m
31	Y=M5x0.8 X=11.1			10	1.0 m
41	Y=10-32 UNF X=11.1			30	3.0 m
51	Y=M5x0.8 X=19.3				

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